

**THE RAILWAY GAZETTE**

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INCORPORATING

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## Tariff Increases and Traffic

AN interesting analysis of the effect of the increased charges on the traffic and receipts of the four amalgamated railway companies was given by Sir William Wood in his recent evidence before the Railway Rates Tribunal. The increased charges came into force on October 1 last, and for the 13 weeks to January 2, 1938, the ordinary passenger traffic which was subject to the increase showed an advance of 1.43 per cent., whereas that which was not subject to the increase declined by 0.11 per cent. In all passenger train traffic subject to the increase there was a growth of 1.03 per cent., against a decline of 0.91 per cent. in traffic which escaped. Higher class merchandise subject to the increase was 2.90 per cent. less in quantity, whereas traffic of this class not subject to the increase was 2.29 per cent. greater. There was an addition of £180,000 or 1.7 per cent. to the receipts from this category of traffic due to the higher charges. It is the view of the railway companies that there has been no important loss of traffic in this category following the increase in charges, and that the reductions in volume have been probably due to changes in trade conditions. The volume of merchandise traffic in classes 1-6, which was subject to the higher charges, showed an increase of 7.61 per cent. in the 13 weeks to January 2, 1938, and in coal the corresponding increase was 3.94 per cent. For the four companies together the gross increase in receipts in 1937 over 1936 was £7,190,221. About 23 per cent. of that increase is due to the higher charges and the balance is due to a greater volume of traffic.

## Derby Day

Epsom is a name of strange and baneful influence, and for most of us it would be as vain to claim indifference to the Derby as it is dangerous to boast immunity from the power of the Epsom salt. But our capitulation to the Derby is willing, and made in such numbers that transport would doubtless be satisfied if it had to deal with the confirmed enthusiasts alone, to say nothing of the extra thousands who for the rest of the year hardly know the difference between a bookmaker and a master of *belles lettres*. We publish a letter on page 1058 this week recalling that it is just 100 years since railway transport to the Derby was first provided, the London & Southampton advertising its intention on May 29, 1838, to run extra trains during the meeting from "Vauxhall to that point of the railway to the south of Kingston which is nearest to Epsom." The extra service—of eight trains between 6 a.m. and 1 p.m.—compares amusingly with the five-minute Southern electric service run this year to Epsom Downs, and Tattenham Corner stations; and with the London Transport buses every 30 sec. on Derby Day from Morden to the course.

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## The Week's Traffic

On the passenger side the decreases shown by the four main line companies for the past week are not easily understandable, as they go against heavy declines for the corresponding week of last year. The merchandise decreases for the week on the L.M.S.R. and L.N.E.R. compare with gains of £11,000 and £23,000 respectively a year ago, and the combined coal traffics of the four companies for the corresponding week in 1937 showed an advance of £124,000. Aggregate traffics of the four companies to date amount to £61,106,000, a decrease of £1,042,000 or 1.67 per cent. Passenger train receipts for the 21 weeks are £24,606,000, or £662,000 below those at this time a year ago.

	21st Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R.	37,000	44,000	47,000	128,000	514,000	2.05
L.N.E.R.	17,000	44,000	43,000	104,000	290,000	1.56
G.W.R.	13,000	15,000	22,000	50,000	109,000	1.05
S.R.	22,000	3,000	8,000	33,000	129,000	1.62

Mersey Railway receipts for the past week were up £141, bringing the aggregate increase for the 21 weeks to £3,243. Amongst Irish railways the only increase for the week is that of £109 on the Great Southern which was £1,738 up in passenger earnings, but £1,629 down on the goods side. London Transport receipts for the week show an advance of £110,100.

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## Roumanian State Railways in 1937

The revenue of the Roumanian State Railways during the year 1937 increased by 15.3 per cent. over the 1936 figure to a total of 11,655 million lei, made up of 8,022 million lei from freight traffic (an increase of 14.7 per cent.), 3,087 million lei from passenger traffic (an increase of 17.5 per cent.), and 546 million lei from miscellaneous operations. The operating expenditure amounted to 9,721 million lei, giving an operating ratio of 83.3. Goods traffic increased by 3.5 per cent. to 26.6 million tonnes. The gross tonne-km. over the system increased by 4.2 per cent. to 21,228 million, and the locomotive-hauled train-km. by 9.4 per cent. to 67.5 million; the locomotive-km. amounted to 78.5 million km., an increase of 7.8 per cent. During the year, express railcar services were introduced between Bucharest and Constantza and Bucharest and Brasso, and an ever-increasing proportion of the train-mileage, particularly in local and branch line services, is

being operated by railcars, of which there are now 220 in traffic. The distance covered by railcars last year was 13.85 million km. Fifty heavy 2-8-4 express steam locomotives were acquired during the year, and others are on order. Passenger road services were operated by 168 buses over a route length of 3,983 km., and road freight services over 951 km. by 22 lorries—which carried 2.5 million passengers and 11,000 tonnes of goods.

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#### Overseas Railway Traffics

The Entre Rios and Argentine North Eastern Railways, which serve territories not affected by the adverse climatic conditions prevailing in the districts where the other Argentine railways operate, secured traffic increases of £3,616 and £2,406 respectively during the past fortnight. In the same period the Great Southern had a net decrease of £3,785 in gross earnings. Compared with the financial year 1935-36, the Pacific, the Great Southern, and the Central Argentine still show increases. On the Central Uruguay Railway receipts in sterling have increased by £4,371 during the past two weeks, and the decrease in currency has been brought down from \$239,684 to \$218,413.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific	48th	85,236	- 21,340	4,242,748	- 362,320
Buenos Ayres Great Southern	48th	131,017	+ 2,853	7,150,432	- 27,874
Buenos Ayres Western	48th	40,943	- 7,072	2,170,720	- 234,321
Central Argentine	48th	93,049	- 46,390	5,731,393	- 1,630,653
Canadian Pacific	21st	476,600	- 48,800	9,542,200	- 779,400
Bombay, Baroda & Central India	7th	277,275	+ 6,675	1,398,750	- 33,750

The Canadian Pacific which at the end of April showed an aggregate decrease of £591,400 in gross earnings has had to record a drop in net earnings for the same period of £748,600.

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#### Wagons-Lits Results

The results achieved by the International Sleeping Car Company in the year 1937 are noteworthy for the resumption of dividend payments. For 1930 the preference capital of fr. 15,000,000 received its full 5 per cent. dividend, but the ordinary capital of fr. 598,333,300 had received nothing since the 20 per cent. paid for 1929. Traffic showed a general improvement during the year 1937, the number of passengers having been about 20 per cent. greater than in 1936. An important time extension of the company's contract with the Italian State Railways has been granted. From its holding in Thomas Cook & Son the company received £175,000, against £50,000 for 1936.—

	1937	1936
	Belgian francs	Belgian francs
Profit on working ..	105,374,410	84,960,507
Income from investments, etc. ..	54,657,175	11,443,768
Total income ..	160,031,585	96,404,275
Interest and other charges ..	57,846,942	60,632,530
Balance ..	102,184,643	35,771,745
Brought forward ..	103,461	131,716
To rolling stock amortisation ..	65,000,000	35,800,000
To reserve ..	3,728,810	—
Dividend payments ..	29,183,332	—
Carried forward ..	4,375,962	103,461

The dividends paid include six years' arrears and the current year's dividend on the cumulative preference shares, and 4 per cent. on the ordinary shares.

\* \* \* \*

#### Growths and Railways

Ignoring such purely railway-dependent centres as Crewe or Swindon, there are few towns in this country which do not owe part of, and sometimes almost their entire growth during the past century to the railways. This is immediately evident from the histories of well-known

holiday resorts, such as Blackpool or Brighton, Skegness or Torquay. An interesting example is Cleethorpes, raised from a seaside village by a railway which even owns its pier, promenade, and other seashore amenities. Seldom, however, is there any spontaneous expression of gratitude for past and present services—these are like maternal love, naturally taken for granted. Rarely has a municipal body spared a favourable word for a facility, which if it had no better result, was, after all, probably responsible for providing the *raison d'être* of such an assembly. If a certain resort has shown progress due to railway enterprise during the past few years this is converted into the slogan "Sandbeach is so progressive"; if the reverse, then it is undoubtedly the fault of the railway company's service. Some recognition was recently discovered however—in the *Weston-super-Mare Gazette*—which pointed out that during a week last August there were staying in the town 96,000 visitors who had arrived by rail—between four and five times as many as arrived by other forms of transport. The paper remarks that the railway "is the best friend the town of Weston has had or ever will have."

\* \* \* \*

#### L.N.E.R. Police Dogs at Work

Three villainous-looking ruffians secreted themselves in Shed 22 at Alexandra Dock, Hull, one Saturday afternoon recently; a few yards away a dock loafer snatched a woman's handbag; a thief raided a wagon of goods by the dock side; and another disreputable vagabond helped himself to some oranges on the Riverside quay. These rogues were as formidable a gang as one was likely to meet in any seafaring town, but the newspaper representatives and photographers who saw them in the act of committing their crimes had no qualms, for the ostensible desperadoes were actually respectable members of the L.N.E.R. Police Force in disguise. Uniformed members of the force with their dogs gave a display to illustrate the remarkable intelligence of these animals, which are mostly Alsatians, full of fire and vigour. They are trained to seek out loafers on the dock property, knock them down if they attack a constable or a woman, and stand guard over them until they are apprehended by a member of the Police Force. In all the cases mentioned, the dog caught his man and had him down in a few seconds. The dogs are kept muzzled, otherwise the dockyard intruder would be in grave danger of losing his life.

\* \* \* \*

#### "On Time" Carries On

Mr. T. W. Royle, M.B.E., who comes to the position of Chief Operating Manager, L.M.S.R., from that of Chief Assistant Commercial Manager, draws an interesting comparison between the functions of the two departments in his first message to the operating staff through the medium of *On Time*. Expressing his determination to pursue the ideal of "every train to time on every day," so auspiciously launched in 1934, Mr. Royle compares railway timetables with the catalogues or samples of a commercial enterprise. If timetable promises are not fulfilled, the railway will not receive "repeat orders." On the other hand, unfailingly efficient provision of the facilities advertised in the timetables has a cumulative effect, until the idea of service becomes synonymous with the name of the railway that provides it. The task of the Operating Department, therefore, although allowing no relaxation of effort, brings a growing reward. That it has been well begun, Mr. Royle affirms from his own experience of the increasing "sales" of the Commercial Department. His confidence that the effort will be sustained he expresses in the title of his message to his staff—"I know I can rely on You."

### Distracting Lights Along the Line

Concern is felt in some quarters, as the new President of the Institution of Railway Signal Engineers, Mr. G. H. Crook, pointed out in his inaugural address on February 23, at the great increase in street lights and advertising signs which threaten to interfere with the interpretation of railway signal indications. At one time almost all lights seen near the railway were white, and with the general adoption of red and green for running signal indications—to which yellow was later added—the risk of their being mistaken for signals disappeared, although it had previously been felt and led at times, we believe, to street and other lamps being screened. Now, however, all sorts of coloured lights are appearing on every side, to the annoyance of another public service besides railways, for the Astronomer Royal at Greenwich has voiced a protest against the increasing brightness of the night sky. A certain type of gas-discharge street lamp looks very like a green colour-light signal directly mist arises, and another type looks like a yellow signal. Mr. Crook spoke of legislation being probably necessary to combat the evil, but we believe that it is already possible in the worst cases to obtain an injunction against the owners of lights, requiring them to screen them effectually or replace them by the ordinary so-called white light. Large numbers of new advertising Neon signs are augmenting the trouble daily, but whether existing powers will suffice to deal with it satisfactorily remains to be seen.

\* \* \*

### Railcars v. Steam Trains in France

What is probably the first reduction on record owing to lack of adequate patronage, in the frequency of a high-speed railcar service has been made on the Paris—Havre main line of the French National Railways, where the four 2-hr. railcars each way daily over this 141½-mile route have been reduced to two, so arranged that all four workings can be handled by one car. On the other hand, railcar sets have proved inadequate to handle the morning traffic from Brussels to Paris, and the evening service back, with the result that steam trains are being substituted, on slower schedules. To counterbalance this reversion to what was previously a steam working, in the Eastern Region the important 5.40 p.m. *rapide* from Paris to Strasbourg becomes a railcar, with a gain of time of one hour on the journey. A new morning service by railcar unit from Tergnier, Lille, Douai, and Arras to Paris, and back in the late evening, will be welcomed by business men, especially as the Lille—Paris and Arras—Paris times are the fastest yet tabled. But perhaps the most interesting railcar announcement is that in October next this mode of transport is to restore the service that ran in pre-war days between Boulogne and Basle, permitting the London—Basle journey to be made without night travel. By covering the 459 miles from Boulogne to Basle in 7 hr. 28 min., the railcar will greatly increase the radius of possible connections the same day at the Swiss end of the journey.

\* \* \*

### Compensated Springing

The publication of our brief description in THE RAILWAY GAZETTE of May 20 of the "XB" Indian standard type of 4-6-2 locomotive, has revived the old controversy as to the relative merits of compensated and independent springing for locomotives. Except on the Great Western and the old L.B. & S.C.R., compensated springing has never found general favour in this country, and latterly even the Great Western has given it up. Doubtless this has been due to the generally excellent condition of main-line permanent way in this country, produced by our day-to-day maintenance system. On the other hand main-

tenance by large revisionary gangs at comparatively infrequent intervals, in many cases combined until recently with indifferent drainage and insufficient ballast, permitted the development of considerable irregularities abroad even on main lines, and in such circumstances the fewer the number of suspension points on a locomotive the less liable it would be to derail. The chief argument against compensating appears to be that the breaking of one spring may throw a large proportion of the total weight directly on to the axles.

\* \* \*

### Locomotive Counterbalancing

Theoretically it is possible to arrange the cranks of a four-cylinder locomotive so that both revolving and reciprocating parts can be completely balanced. Normally, however, the cranks are set at the four quadrants, and in this arrangement the reciprocating forces are self-balancing, although an unbalanced couple remains. This, however, is comparatively small, so that a four-cylinder locomotive represents the closest practical approach to the ideal. But even here it has been pointed out by Mr. D. C. Brown in the paper on this subject that he read before the Institution of Locomotive Engineers recently (see our issue of April 29), that it is possible to have large hammer blows delivered by individual axles when, with the inside and outside cylinders driving different axles, an appreciable proportion of the reciprocating masses is balanced separately for the inside and outside cylinders. Another method of setting the cranks of a four-cylinder locomotive is that adopted on Southern Railway engines of the "Lord Nelson" class. In this case, the leading axle has two inside cranks set 90 deg. apart, and the intermediate axle, two outside cranks also 90 deg. apart, but set 135 deg. ahead of the corresponding cranks on the leading axle. There are, therefore, eight separate impulses per revolution. Forty per cent. of the reciprocating parts are balanced, 10 per cent. each in the leading and trailing, and 20 per cent. in the intermediate wheels. The maximum hammer blow of any wheel is only 1½ tons at 60 m.p.h.

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### Railways and Beer Again

Some time ago we described and illustrated some of the beautifully-printed coloured beer cards, descriptive of German railway history and operation, issued with their bottled beers by the Paulaner, Salvator, and Thomas Breweries, of Munich. A Stuttgart correspondent now sends us a complete set of these cards, together with an album for their reception. This album is actually a very finely printed and produced miniature history of German railways, written in simple language. Appropriate spaces are left for the insertion of the cards, pasted at the corners, the whole then making a very charming picture-book, of the same high standard as the celebrated German State Railway calendars. In a period when many of the wealthier and exclusively motor-minded young Britons seldom see the inside of a train, are there not possibilities in such a publication as "Railway Wonders, published on behalf of Worth and Bassington"? Whether such a venture would be as attractive in England as in Germany may of course be questioned. German colour printing attains a very high standard indeed, a standard which is hardly reached by the average English cigarette card. A certain firm of tea blenders has recently been giving away pictures of Shakespeare characters with its packets of tea, and the collection of a set entitles the tea drinker to a "Complete Works of William Shakespeare" at half price. From "Shakespeare and Tea" to "Railways and Beer" is not an impossible step, especially as Munich has already shown us how to do it.



### The Conveyance of Tomatoes

**R**EPUTED to have been introduced into England in the 16th Century as a decorative plant because of its ornamental fruit, the tomato has now become a popular food. The vagaries of our climate preclude its extensive cultivation out of doors, but tomatoes are now being grown under glass in increasing quantities in many parts of the country in order to meet the steadily rising demand. The main producing areas are Essex, Hertfordshire, Middlesex, and Sussex, but fairly large quantities are also grown in various parts of Scotland. Home-grown supplies, however, are inadequate to meet requirements, and over 135,000 tons of tomatoes, with an aggregate value of £4½ millions, are imported annually from the Channel Islands, the Canaries, and the Netherlands. Of this large quantity, about 56,000 tons were imported during 1937 from Jersey and Guernsey, representing nearly nine million packages, destined for something like 300 provincial centres throughout the United Kingdom. A substantial proportion of this tonnage is dealt with by the Great Western and Southern Companies, whose steamboats regularly serve the Channel Islands from Weymouth, and Southampton respectively. It is of interest that the Guernsey crop is almost entirely grown under glass and therefore comes on the market much earlier than the Jersey crop, which is cultivated out of doors. There are about 2,000 growers in Guernsey, most of whom do not own more than half-an-acre of glass. The season lasts from April to November, and throughout this period the tomatoes are carefully picked by hand and graded to a schedule laid down by the States Committee for Horticulture. They are then packed into chip baskets weighing 14 lb. gross and conveyed to the quay, where they are unloaded by hand from the carts to scale boards and craned into the holds of the steamers. In some cases chutes and containers are used to facilitate loading. Special attention is given to the method of stowing, traffic for various parts of the country being placed in particular positions in the steamer holds in accordance with stowing charts planned by the railway companies in the light of previous experience.

During the height of the season the railway companies' sailings to the islands are considerably augmented to deal with the rush of traffic. To facilitate sorting at the English port, the Guernsey States Legislature has provided for the produce to bear address labels of various colours, for example, blue for Welsh towns, red for Manchester, and yellow for Scotland; traffic for the London markets is easily distinguished by coloured lines printed diagonally across white labels, a different colour being used for each market. In Jersey, the tomato plants are placed out in the fields immediately after the potato crop has been dug, and the crop comes on to the market between August and November. Here again the States authorities carefully control the sorting and packing of the ripe fruit, which passes in wooden trays of various dimensions, wicker and chip baskets, and even cardboard trays. Containers are frequently used to expedite the transfer from quay to ship and *vice versa*. Every vessel conveys an average of 400 tons a trip at the peak of the season, and as this represents about 50,000 packages, frequently for over 200 destinations, the amount of sorting required at the English port can readily be visualised. It is essential, of course, that the fruit should reach the consumer retaining its "bloom," and the tomatoes are therefore unloaded with the utmost despatch and transferred immediately to vacuum-fitted ventilated vans. These are despatched on express freight services to places throughout the country, usually giving an arrival in the early hours of the following morning. Express motor vans meet the trains and

deliver the fruit to the markets in the minimum of time. The facility with which the very large number of packages is dealt with, even at the height of the season, is a tribute to the close co-operation which the railway companies have effected with the growers and the buyers.

### Wagon Sheets

**A**N interesting sideline of railway operations is the manufacture, repair and use of wagon sheets, of which the British railway companies own about 350,000. These sheets are for covering open wagons to prevent damage through wet or exposure to traffic which for various reasons cannot be loaded in containers or covered trucks. To reduce unnecessary cross-haulage between the companies, the common user principle was applied to sheets concurrently with the introduction of the common user of wagons in 1917. Every company party to the arrangement contributes its quota to the pool, and the stocks of the individual companies are theoretically conserved to them by balances being struck twice weekly at the Railway Clearing House on the basis of particulars supplied by numbertainers at the exchange junctions. Any excess flow of sheets as between the various companies is then corrected by means of equation payments immediately the balances have been determined. The phrase "theoretically conserved" is used advisedly, as owing to the circumstances under which the exchange records are compiled and the accentuation of difficult conditions by inclement weather, the achievement of absolute accuracy in record taking is really impracticable. A complete census of wagon sheets is therefore taken half-yearly on every company's line, after which any differences between the actual and booked stocks of the individual companies are adjusted. To facilitate recording, and also sheet shop operations, every sheet is numbered and bears the initials of the owning company and certain other symbols indicating the date on which it last passed through the sheet shops. Incidentally, condemned sheets which are sold to the public are dealt with in a manner which indicates to railway staffs that the sheets are no longer railway property.

Wagon sheets are manufactured by the companies from good quality canvas, treated with a number of coats of linseed oil and vegetable black. Damage frequently occurs to them, however, through protruding nails and sharp corners of loads which they cover, while the frequent folding and wear to which they are subjected cause small cracks and holes. Failure to repair these at the earliest possible moment would greatly increase the risk of damage to goods by wet and have an adverse effect on the goods compensation account. Regular inspection after use is therefore essential in order that any defective sheets may be worked to the sheet shops without delay. While the methods of redressing and repair followed by the various railway companies are becoming more and more standardised, it has not yet been possible to reach complete uniformity. In order to ensure that a high standard of work is accomplished in the various shops, therefore, it has been the practice for a number of years for every company's inspectors to make periodical examinations of an agreed number of sheets immediately after repair at their own and other companies' sheet shops. It will be apparent that, owing to the flow of traffic between the companies not being identical in each direction, the number of sheets passing on to each company's line, and consequently the proportion requiring repair or re-dressing, were not often equivalent to the percentages of their contributions to the common user pool. Certain companies had thus to carry out an undue proportion of work, the amount varying from month to month according to



circumstances. For a number of years, therefore, the companies debited each other with the cost of repairing each other's sheets. Owing to the variations in repairing practice and costs as between the companies, this method was felt to be somewhat inequitable and in 1932 a scheme was introduced under which no charge was made for repairs, sheet for sheet, or for re-dressing, coat for coat, between companies, but only for the excess work.

This arrangement proved open to a similar objection on the score of variation in costs between the different companies and a new scheme was introduced in 1935 under which the quantum of repair work to be carried out by each company was based on its contribution to the common user sheet pool. On the basis of previous experience it was found that, on the average, sheets passed through the sheet shops just under four times each year and each company was therefore required to repair annually slightly under four times the equivalent of its contribution to the booked stock of sheets. To facilitate the operation of the scheme, arrangements were made under which any company repairing more or less than its quota during a four-weekly period was permitted to transfer to or from the other companies during the following four-weekly period to the extent necessary to adjust the position, these adjustments being regarded as additions to or reductions from the agreed allocation. This scheme worked with complete satisfaction during the experimental year and has been continued since as the number of unbalanced repaired sheets, which was very substantial in previous years, has been reduced to very small numbers. It will be appreciated that while each company might repair its full quota, it does not necessarily follow that the number of sheets repaired annually for all companies would be equivalent to the number of their sheets repaired by other companies but, in fact, this difference has proved almost negligible. The mobility of the sheets as between the companies has not been impaired in any way by the operation of this scheme, which is being continued during the present year and may become a permanent feature of British railway practice.

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### Swiss Federal Railways

THE improvement in world business conditions and the amelioration of the economic situation in Switzerland, due chiefly to the devaluation of the franc, brought in 1937 to the Swiss Federal Railways, which had been adversely affected ever since 1930, an increase both in traffic and receipts surpassing all expectations. In comparison with 1936, passenger numbers increased in 1937 by 5.05 millions or 4.7 per cent., and passenger receipts by fr. 12.86 millions or 10.7 per cent. Even so these receipts were lower by fr. 26.09 millions or 16.4 per cent. than those of 1930, which reached the record of fr. 159.12 millions. Consignments of luggage, postal parcels, livestock, and merchandise, which had decreased by 6.47 million tons or 33.6 per cent. between 1929 and 1936, were greater by 2.97 million tons or 23.2 per cent. than the exceptionally low figures for 1936. Receipts from this traffic increased in 1937 by fr. 31.41 millions or 19.7 per cent. in comparison with 1936, but were still fr. 55.14 millions, or 22.4 per cent., below the record figure for 1929. The total transport receipts of fr. 323,594,834 for 1937 show an increase of fr. 44,273,414 or 15.8 per cent. over those of 1936, but are still fr. 78.35 millions, or 19.5 per cent. below those of 1929. Transit traffic improved by 1.67 million tons, or not less than 90.7 per cent., in comparison with 1936, due almost entirely to heavy coal consignments. No direct regulation of road transport has yet been inaugurated, but a commission of experts has been appointed to clear the ground

for a reform of the constitution, which may lead to an affirmation of the principle that long-distance traffic should mainly use the railways. Reference is made in the report to the Sesa Company, which has continued to arrange with consignees tariffs for the protection of rail consignments against lorry competition and for the increase of such consignments; in the autumn these arrangements were extended to cattle traffic. Door-to-door services are now in operation in most parts of the country.

In the actual operating expenses of fr. 231,005,955 there was an increase of fr. 1,153,940. Payments to the staff, other than those engaged on construction work, showed a net decrease in 1937 of fr. 1.1 million in comparison with 1936. For salaries, wages, pensions, overtime, and uniforms the amounts paid were fr. 146.7 million in 1937, against fr. 149.1 millions in 1936, and the numbers of the railway operating staff have been reduced from 28,380 to 27,746. The chief reductions have been in station staffs from 12,312 to 12,070, shopmen from 3,838 to 3,694, permanent way men from 3,569 to 3,453, and train staff from 2,404 to 2,306. The number of engineers (2,449) is the same for both years. This reduction in staff is the more noteworthy considering the heavy increase in traffic. Devaluation of the franc increased the cost of materials, yet as a result of progressive rationalisation in the shops there has been a further reduction in the charges for maintenance of vehicles. The accompanying table compares results in the past two years. At present the rate of exchange is about fr. 21.75 to the £:—

	1937	1936
Passenger numbers .. ..	119.99 millions	106.94 millions
Goods traffic, tons .. ..	15.77 millions	12.80 millions
Train-kilometres .. ..	45.5 millions	43.2 millions
Operating ratio, per cent. ..	66.40	77.13
	Fr.	Fr.
Passenger receipts .. ..	133,034,132	120,168,760
Goods and postal traffic receipts ..	190,560,702	159,152,660
Gross receipts .. ..	338,312,023	291,366,033
Expenses .. ..	224,628,513	224,727,854
Net receipts .. ..	113,683,510	66,638,179

The final result of the year's working, after making allowance for interest charges, &c., is a deficit of fr. 14,556,778, comparing with fr. 67,680,375 in 1936, which was the largest deficit recorded, except that of fr. 72,505,841 in 1921. The best year in the history of the Federal Railways was 1924, with a profit of fr. 15,153,534. In 1930, the last year to show a profit, the final surplus was fr. 1,594,838. The more satisfactory financial position in 1937 as compared with 1936 is partly due to the reduction of fr. 8.2 millions in interest charges following on the redemption of earlier loans by new long-term loans at lower rates of interest. Amongst the important works in hand are improvements at Geneva and Neuchâtel stations and a deviation and doubling of lines as between Wilerfeld and Berne. Some 37 level crossings were eliminated during the year. All electric locomotives and motor coaches have now been equipped with A.T.C. apparatus. As all the distant signals on the electrified lines have already been fitted with the necessary apparatus, safety in train working may be regarded as decidedly improved over the whole system. These devices have given excellent results since the first of them was installed in 1933, as described in THE RAILWAY GAZETTE of February 16, 1934, page 239. Following on the general improvement in traffic the administration has restored a certain number of regular goods train services which had been withdrawn in previous years on account of the reduction in the number of consignments offering. A new halt at Morges-St. Jean was opened during the year for the use of a limited passenger, luggage, and parcels service. Among the new rolling stock on order are five electric shunting locomotives, two Diesel electric railcars, a fast electric railcar, and five electric motor coaches.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Preserving Model Locomotives

75, Delamere Road,  
Ealing, W.5, May 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have been very greatly interested to read your editorial remarks concerning model exhibits at the South Kensington Museum, particularly as I have personally suggested the same course that Mr. Westcott mentions. Having recently handed over to the museum my two models, i.e., *Caerphilly Castle* 4-6-0, and *Majestic* 4-2-2, I was able to learn some facts of interest, one principally is that the grant allowed to the authorities for expenditure on exhibits is quite insufficient to enable them to institute any model locomotive exhibition on the lines suggested.

But as the question has been ventilated in your columns regarding some form of model museum I am wondering if through *THE RAILWAY GAZETTE* or *The Railway Magazine* you could call together those interested in this subject, on similar lines to the committee the late Mr. Stretton and Mr. Rous-Marten instituted some 40 years ago, of which committee I had the pleasure of being a member. The object of such new committee of interested parties would be to approach the source responsible for the present grants and seek co-operation for a museum of all classes of locomotives. The present collection at South Kensington, while good, is quite inadequate from a model point of view and, while models of very early engines are interesting, the museum seems to cater only for this class, while present day students of the locomotive desire to see the latest productions in preference.

Yours faithfully,  
A. DAVIDSON

### The First Derby Railway Traffics

The following Letter to the Editor from Canon Reginald B. Fellows was published in *The Times* of May 28:—

SIR,—It is just 100 years ago since special race trains were first advertised for Epsom. *The Times* of May 29, 1838, published a notice that the London & Southampton Railway—though the line had only been opened on the 21st—intended to run for the convenience of visitors to Epsom Races extra trains on the four days "from Vauxhall to that point of the railway to the south of Kingston which is nearest to Epsom." Eight trains were to run between 6 a.m. and 1 p.m. The fare (single) first class 2s. 6d., second class 1s. 6d. Return trains were also advertised. The company offered to co-operate with those who were disposed to convey passengers from the railway to the racecourse. The distance was about five miles.

*The Times* of May 31 described what happened at Nine Elms station on Derby Day:—

Upwards of 5,000 persons were assembled at the gate of the Southampton railroad, at Nine Elms, near Vauxhall, for the purpose of going by the railroad trains to the Kingston station, and from thence by other conveyances to the racecourse. The steamboats which ply from London Bridge and from Hungerford were filled with passengers, who made sure of getting down to Epsom by the railroad. Hundreds were fated to be disappointed. There were 10 times more applicants for seats in the train vans than there were seats for their accommodation.

In "A Royal Road," the short history of the London & South Western Railway written by Sir Sam Fay in 1883, it is stated that the officials were powerless to cope with the crowd and sent for the Metropolitan police, and at 12 o'clock a notice was posted on the booking-office window announcing that no more trains would run that day.

Your obedient servant,  
REGINALD B. FELLOWS

(See editorial note on page 1053)

### Recent Southern Californian Floods

Remarkable feats accomplished in the repairs to the various railways radiating from Los Angeles

Mention was made in *THE RAILWAY GAZETTE* dated April 8, of the damage caused by the floods at Los Angeles early in March; the following are further details. Between March 1 and 4, 11.15 in. of rain fell and in the 24 hours ended 4.30 a.m. on March 3 the rainfall was 6.03 in. The lines of the Southern Pacific and Atchison, Topeka & Santa Fe Railroads were affected for distances of nearly 200 miles from Los Angeles

#### The Southern Pacific Railroad

The S.P. coast line towards San Francisco was the least affected of its three main lines radiating from that city, but on it three bridges were washed out, and the piers of another were undermined; slips, washouts and embankment settlement also occurred. The El Paso line running south-eastwards had 1,000 ft. of trestle viaduct washed out at 8 different points, also 4,000 ft. of embankment were destroyed at 15 places, and another 5,000 ft. were damaged over a distance of 130 miles. At Colton a stream burst across the yard burying the goods sidings, engine shed, turntable, and pits to a depth of 3 ft. with sand and silt; buildings were also undermined. In Los Angeles the Dayton Avenue bridge over the Los Angeles River was

washed out and an embankment was destroyed. The greatest damage was, however, on the San Joaquin Valley line north of Los Angeles; 170 miles of line were seriously affected and a further 130 miles less so. Landslides blocked the entrance to one tunnel and partly filled two others with debris. Culverts were filled up and numerous wash-outs occurred. The Santa Clara River washed out five steel bridges, and buried four others under logs and sand. Four miles of line were destroyed, and 16 miles were impassable.

Repairs were effected with the aid of petrol and diesel shovel and drag-line excavators, tractor-hauled scrapers, and tractors equipped with bull-dozer, as well as cranes and large fleets of lorries. Numerous pile trestle bridges were erected to span gaps where buried steelwork permitted pile-driving; elsewhere diversions were constructed. Many of the worst sections were in narrow valleys and almost inaccessible by road. At one place a 23-mile detour was necessary to reach a point 3 miles further up the line, and materials and men had thus to be carried long distances over broken mountainous country to reach points from which repair work could be begun in both directions. In spite of the extent of the damage and the

difficulties encountered, traffic was resumed on the three lines in a remarkably short space of time. The coast line was reopened on the morning of March 5, the El Paso line on March 8—despite the impassability of the roads in that area until March 5, and even the San Joaquin Valley line was restored by the evening of March 15.

#### A.T. and Santa Fe R.R.

On the Santa Fe the story was very similar. The greatest damage was on the 81-mile section through the San Bernardino Mountains. Four miles of line were washed out and a length of 1,900 ft. was buried under boulders and debris to a depth of 20 ft. or more. In one gorge 3,800 ft. of track were left overhanging the channel 18 ft. to 40 ft. below. In another canyon the river remained in such torrential flood that no available material for restoring the embankment could be held in position, and resort had to be made to blasting the rocky walls of the gorge above the line to bring down sufficient boulders to reform the road-bed. The other Santa Fe lines were correspondingly but not so seriously affected. Continued rain and spates up to March 10 impeded repair works, but the lines were restored and reopened for traffic between March 10 and March 17. The magnitude of the works entailed on both these railways and the speed with which they were carried out was a triumph for the ingenuity and organisation of the engineers.

## PUBLICATIONS RECEIVED

**Histoire des Chemins de fer Yougoslaves, 1825-1937.** By Drago-mir Arnaoutovitch. Paris (VI): Dunod, 92, Rue Bonaparte. 9½ in. × 6½ in. 366 pp., with plates and folding maps. Price fr. 60.—“Hardly an enviable lot is that of the Jugo-Slav people!” That opening sentence, in Dr. Arnaoutovitch's introduction, coupled with a tragic dedication of the book to the memory of his lost daughter and brother, does more than hint at the lurid political history of the country whose communications he describes and discusses, and at the primarily strategic considerations which influenced their origins. The countries now forming the United Kingdom of Jugoslavia have been no havens of rest, whether in recent or in not-so-recent times. In 1817, even, the state of the Balkans inspired the opening lines of an afterwards celebrated alphabetical poem in that locally famous Westminster School magazine *The Trifler* :—

An Austrian army awfully arrayed,  
Boldly by battery besieged Belgrade

In unquiet succession there have been the westward surge of the Turks, the ambitions of the old Austro-Hungarian Empire, and the *Drang nach Osten* of the Germany founded by Bismarck. Much of these influences can be traced in the history of transportation in the lands of the Southern Slavs. We see the German Hamburg-Baghdad dream clashing with what would nowadays, doubtless, be called a Petrograd-Belgrade Axis. And those who, like Dr. Arnaoutovitch, execrate the authors of the *Drang nach Osten*, are often apt to overlook the counter menace, from the Teutonic point of view, of that north-to-south Slavonian link.

Imperialism on the part of the Central Powers was undoubtedly responsible for the earliest railway projects in what is now Jugoslavia, for during the period 1825-7 the Austrian Government and the Hungarian Diet instituted a special commission to study the railway question and to plan future routes. Their findings had a particular significance for the Balkan peoples, for among the projected lines were the following: Budapest-Ossiek, Budapest-Sissak-Zemoun, and a branch from Sissak to a strategic point on the Adriatic. This was only a shadow-beginning, for the company involved went into liquidation in 1828. Eight years later, the German pioneer Friedrich List was among those interested in a proposal for a line between Budapest and Fiume, via Sissak. Railways to the Adriatic, through Styria, were a logical commercial development for the Empire, and, when they eventually came, in the 'fifties, it should not be inferred that they were all part of a concerted pan-German *Drang*. It should be remembered that Austria had yet to face a war with Prussia

towards the close of this period, and that isolation from a seaboard would have placed her immediately in a very serious position. Self-protection rather than exploitation was a primary consideration. Dr. Arnaoutovitch is, not altogether unnaturally, prejudiced where the real and the supposed villainies of Mitteleuropa are concerned, from the days of Metternich onward.

The fact remains that when, in 1914, Serbia faced Austria's declaration of war, she was possessed of a railway system which had considerable significance, both domestically and internationally. And when, after the war, the Jugoslav kingdom emerged phoenix-like from the ashes of Serbia, Croatia, and incidentally parts of Austria, she had one of the most thoroughly war-wrecked railway systems in the world. From that chaos have risen the present remarkably efficient State Railways of Jugoslavia. This history is divided into three parts, relating, respectively, to the origin of Serbian railways and their progress before 1888; to the 1889-1918 period, with special reference to the Balkan and European wars; and lastly to the present Jugoslav system, from 1918 to 1937. The book finishes with a large section devoted to bibliography, and eight maps. The author has had 30 years of railway experience in Serbia and Jugoslavia, and this exhaustive work may be said to crown his labours. It is thorough. It even staggers the reader by its thoroughness, and might be described as a thick slab of documentary evidence rather than a history. A history book must have something of the story-teller's art about it.

**Dempster & Son.** By Maurice Griffiths. London: Rich & Cowan Limited, 37, Bedford Square, W.C.1. 7½ in. × 5 in. × 1½ in. 358 pp. Price 7s. 6d. net.—This book tells the story of the railway engineering family of Dempster from the time of the American Civil War up to the present day. In order to secure historical accuracy, the author sought the assistance of the Railway and Locomotive Historical Society of Cambridge, Mass., in collecting and checking railway data. The early part of the story relates how Nathaniel Dempster, a Wolverhampton apprentice who emigrated to America in 1861, found himself at the outbreak of the Civil War at the head of a Federal engineer corps charged with the destruction of the railroads of Georgia. Despite breathtaking adventures, he survives, and at the end of the war is presented by his wife with the infant who forms the “& Son” of the title of this book. Dempster invests his fortune in the Mississippi Western Railroad, and undertakes the difficult task of rebuilding this concern, coping with a conservative board of directors, and competing with a rival—a fleet of steamboats. He is defeated by a larger company, and

returns to England to take up a partnership with his old firm at Wolverhampton. From this point the story is concerned mainly with the son Clive. Wigford & Dempster, as the firm later became, is quite acceptable as a locomotive building establishment, excepting that at the beginning of the present century it constructed engines with “90-in. wheels, shapely brass-capped chimneys, and shining brass domes” for the Great Northern Railway. Finally Christopher, the son of Clive, joins a motor-coach company owning a fleet of “ruby and cream” coaches operating between London and Sheffield. The Civil War pictures in this book are vivid, and the struggles of the Reconstruction period well portrayed. It constitutes a successful effort to tell a story of adventure and romance in a railway atmosphere.

**A Quick-Change Chuck.**—We have received from the English Steel Corporation Limited, of Openshaw, Manchester, an illustrated folder describing the Vickers quick-change chuck for drilling machines. This device enables drills, reamers, and similar tools to be changed instantly without stopping the machine or reducing its speed. It is made in five sizes to take Morse taper shanks up to No. 5 size. All wearing parts of the chuck are hardened and ground, giving unusually long life.

**Drop Window for Railway Stock.**—The Railok window, described in an illustrated leaflet we have received from Beckett, Laycock & Watkinson Limited, of Acton Lane, London, N.W.10, is a half-drop type designed particularly for situations where rounded top corners make it impossible for existing types of pinch-grip windows to be used. It is easy and noiseless in working, and is positively locked in the closed position. As it can be fitted between pillars of minimum practical depth, it is eminently suitable for sliding doors. The illustration reproduced on the pamphlet shows Railok windows fitted in the doors of the driver's compartments of a Netherlands Railways articulated railcar.

**Magnetic Moulding Machines.**—British Insulated Cables Limited, of Prescott, Lancs., first introduced an all-electric foundry moulding machine in 1931, and now produces a variety of types for different patterns and sizes of moulding boxes. The standard range provides for boxes up to an area of 1,280 sq. in. For areas greater than 600 sq. in. two or more synchronised solenoids are used, so that a uniform pressure is ensured throughout. These machines are economical in operation, current being consumed only during the 1½ to 2 seconds' duration of the squeeze. In consequence, 350 complete moulds in boxes 20 in. × 12 in. × 3½ in. have been produced for a consumption of approximately 3½ units. All standard types of these moulding machines and their associated equipment are described and illustrated in a catalogue we have received from the maker.



## THE SCRAP HEAP

The Western Pacific Railroad (U.S.A.) claims to be the only railway with a Chinese graveyard in its station grounds. This unusual adjunct to railway property is to be found at Winnemucca, Nevada.

\* \* \*

At Amberley station, Sussex, two Southern Railway porters undertake a variety of duties, not the least of which is to conduct the local post office business through the ticket window of this very small country railway station. A few years ago, Houghton village possessed a post office of its own, but the elderly postmistress was compelled to give up business and nobody could be found to carry on. Rather than that the public should suffer by being compelled to travel two miles to get a postage stamp, a happy co-operation between the Post Office Department and the Southern Railway resulted in the railway authorities conducting the post office on station premises. The office is of the non-money order class, but there are a good number of pensions paid and the postal order and stamp trade is brisk.

\* \* \*

At Laguna, an Indian town within sight of the Santa Fe Railway which crosses northern New Mexico, we came upon a great Indian fair which is held here each September. Visitors from many tribes were gathered, trading horses, buying and selling, dancing,

popping away at white clay rabbits in shooting galleries, and crowding into a creaking old Ferris wheel. While we were there the Santa Fe's crack streamlined train, the Super Chief, went whizzing by, leaving behind it a mile-long cloud of dust, tumbleweed, and whirling paper scraps. Truly an impressive sight this was—a roaring, silvery monster racing across a vast continent; yet, to the phlegmatic Indian mind, it was only another train. —From "New Mexico Melodyama," in "The National Geographic Magazine."

### \* \* \* DRIVER GILBERTSON RETIRES

Famous a few years ago as the man who drove The Royal Scot express 11,000 miles through Canada and the United States on its exhibition tour, Driver William Gilbertson, of Upperby Depot, Carlisle, retired from the service of the L.M.S.R. on May 14, his 65th birthday. Driver Gilbertson had been working The Royal Scot train between Carlisle and Euston for five years when in 1933 he was selected to drive the engine *Royal Scot*—then the most powerful passenger type on the L.M.S.R.—on its exhibition tour of Canada and the United States with The Royal Scot train. During the two tours, one before and one after the Chicago Exposition at which the train was on show, it covered under its own power

11,194 miles over the railroads of the North American Continent. In an interview on the eve of his retirement, Driver Gilbertson said: "The hill-climbing powers of our engine, itself so small compared with the American ones, astounded the folk out there. We took our train over the Canadian Rockies at a height of 5,600 ft., and over the Colorado Mountains at a height of 6,100 ft., without the help of a pilot engine, and throughout the tour we did not use a single spare part out of the truckful we took with us.

"When I started on the railway," Mr. Gilbertson continued, "we still had some engines without cabs to protect enginemen from the weather, and with only a handbrake to stop them—if you were lucky. I became a fireman in 1892 and a driver in 1904, so that I've been driving for 34 years. In my time at Carlisle I have served under eight different district locomotive superintendents whom I can remember by name. One of my first 'bosses' was Mr. A. R. Trevithick, a descendant of the famous Cornish pioneer."

### \* \* \* MAILS ON THE RAILWAYS

The mails to Holyhead, Manchester, Liverpool, and Carlisle were despatched on Tuesday night for the first time by the London & Birmingham Railway. This despatching will accelerate the arrival of letters to a great part of the North of England and Scotland by some hours.—From the "Sunday Times" of May 27, 1838.

## One Hundred Years Ago

Extracts from the June, 1838, issue of "The Railway Magazine" (afterwards "Herapath's Railway Journal") and the oldest constituent of THE RAILWAY GAZETTE

**Newcastle and Carlisle Railway.**—The middle district of this undertaking, extending from Haydon-bridge to Greenhead, will be opened on June 18, after which there will doubtless be a very great increase in the traffic, as the inconvenience and delay to passengers, and in the transit of goods, has been much felt, the distance to travel to connect the two portions of the railway being thirteen miles of a hilly and very indifferent turnpike-road.

**Great Western Railway.**—This splendid line will open to Maidenhead, it appears by our advertising columns, Monday, June 4, the birthday of George III. To Reading and Didcot it will be opened next spring, and between Bath and Bristol at the same time. Every precaution is taken to ensure regularity and punctuality, as far as plenty of power will do it. Nine engines are now ready for working this first part, that is at least double the number which is needful. The present intermediate stations are to be at Ealing, West Drayton, and Langley Marsh. . . . Arrangements, we under-

stand, have been made with the leading coach proprietors, by which their passengers to and from places beyond Maidenhead will be transferred to the railway in the following week, and we then anticipate very active operations. . . . A double track of rails is now completed along the entire line, from the Paddington to the Maidenhead station, a distance of 22½ miles; and the road has a remarkably neat and compact appearance.

**Southampton Railway.**—On the 12th ult., the Directors, accompanied by several noblemen and members of Parliament, made an experimental trip on this grand southern trunk line as far as Woking-common, 23½ miles from Nine Elms, and were subsequently joined at dinner by the Duke of Sussex. The trip was exceedingly gratifying and successful. A very high velocity was attained, and preserved nearly the whole way. On the 19th, a second experimental trip was made by the Directors and near 400 ladies and gentlemen to the same place, preparatory to the public opening of the line on Monday, the 21st.

The company were taken in two separate trains of ten and nine carriages. At this time there was a brisk head wind against the trains in their outward trip, whose effects were not diminished by several gentlemen taking their stations on the tops of the carriages. Hence the train in which we were did not, in any instance outwards, exceed 20 miles an hour; but in our return the velocity must frequently have been near 30 miles an hour, notwithstanding the heavy load we had. . . . On Woking-common tents had been erected, and a cold collation provided for the company. It is not usual for us to notice matters of this sort, but it is but justice to the Directors to observe, that this part of the business was not merely done, but it was done liberally and well. While every delicacy which the season afforded was provided, ostentatious extravagance was avoided, and that happy medium kept which excited universal approbation. From Nine Elms the terminus omnibuses now start to the various parts of the city, and steam-boats take the passengers coming by the trains to Hungerford-market and London-bridge for 4d. each. From Woking-common also, we believe, coaches take up to Guildford, Godalming, Farnham, Alton, Bagshot, etc.

## OVERSEAS RAILWAY AFFAIRS

### SOUTH AFRICA

#### Airways Organisation

It has been decided to establish the Airways Branch as a separate department of the administration with effect from May 1, 1938.

#### European Labourers

An interim report by the commission—referred to in THE RAILWAY GAZETTE of March 11 last—appointed by the Minister of Railways to report on the conditions of service of European labourers, has now been issued, and upon its recommendation this grade has now been granted extensive concessions. A new scale of pay has been introduced ranging from 7s. 3d. for married, and 6s. 3d. for single men on joining the service, to 8s. 6d. (married) and 7s. 6d. (single) after four years' service. Other concessions included are: consolidated house allowance, recognised Sick Fund and rent deduction contributions, and the placing of men already in the service in the grades according to their length of service. Leave rules have also been improved and for workshop hands a piece-work bonus system has been recommended. Some 2,500 men are affected by these changes.

#### Permanent Staff

The administration has approved of some 10,000 members of all grades of the staff, who are at present on the temporary staff, being placed on the permanent staff. A considerable number of European labourers will benefit under this decision.

### FRANCE

#### Transport Co-ordination

Progress made in the co-ordination of rail, road, and water traffic was reviewed in a recent address by M. Frosard, Minister of Public Works, on the occasion of the first meeting of the Superior Transport Council under the presidency of M. Daniel Vincent, Senator of the Nord Department. M. Frosard said that in rail and water co-ordination the council had aimed at limiting the number of boats engaged in water-borne traffic and the regulation of the character of the cargoes and tariffs. Control of this type of traffic had been found comparatively easy. But in rail and road co-ordination the problem was more complicated, because of the varied conditions governing passenger and goods traffic.

In regard to passenger traffic, the programme was well advanced. Local authorities had submitted 32 plans for the Departments. Of these 13 had been already approved by the Rail and Road Co-ordination Committee. They involved the closing to passenger traffic

of 1,774 km. of railway lines. The Superior Council had also recommended the adoption of eight other plans, which would close 1,460 km. Apart from these plans, the closing of 489 km. of other lines was proposed, making a total of 3,723 km. or about 2,312 miles in all. Approved plans had come into force since March 1, in the Departments of Calvados and Mayenne, and since May 15 in the Sarthe, Orne, Haute-Savoie, Aisne, Jura, Marne, Meuse, Nièvre, and Aube.

#### Compulsory Powers May be Used

The Minister of Public Works added that it was hoped many other Departments would complete their co-ordination plans before July 1. If not, he might be obliged to make use of the compulsory powers conferred on him by the Decree of August 31, 1937. The closing of lines, however, met with local opposition in some cases. Substitution of road services for trains would not be accepted unless they were assured under satisfactory conditions of regularity, comfort, and security.

The co-ordination of goods traffic was, he said, more complex, and less progress had been made; conditions of short and long-distance goods traffic were still under investigation. Organisation of road transport was essential, as experience in Morocco and abroad had shown.

#### Use of Ultra-Violet Rays in Railcars

Trials of ultra-violet rays as an aid to drivers of electric trains and railcars are now being made by the National Railways Company. Electric lamps used to illuminate the dials in the driver's cabin tend to prevent clear vision of outside signals along the line because of reflection from the windows. To obviate this disadvantage special lamps emitting ultra-violet or dark rays invisible to the human eye, are employed. The figures and hands of the dials are covered by a fluorescent substance which converts the dark rays falling on the dials into visible rays, so that the dials are seen by the reflected light, while the driver's view of the outside signals is unobstructed by any glare from the windows. This method of facilitating the task of the driver is still in the experimental stage, and the railway engineers will make further tests to determine whether it will really be effective in practice.

#### Slight Increase in Railway Taxes

Owing to the recent Decree imposing an increase of 8 per cent. in direct and indirect taxes, the railway tax of 12 per cent. on the transport of passengers and luggage will be increased to 13 per cent. This increase of 1 per cent. will apply to season and workmen's tickets, but will not be applied to the Sunday and week-end tickets issued for the six

zones recently formed for cheap travel within a radius of 100 km. from Paris.

#### Suppression of Level Crossings

The Government road service has undertaken a programme for the suppression of 46 level crossings. The National Railways Company will make a contribution to the expenditure based on the savings made by the elimination of the cost of providing keepers for such crossings. Work is already in progress on 26 approved schemes and 20 others are being examined. Installation of telephone posts at level crossings, where traffic is intense, is also being pushed forward and about 800 miles of main lines will be thus equipped by the end of the year.

### CHINA

#### Thorough Chinese Demolition

Chinese railway demolition does not stop at bridges and viaducts, for in at any rate some cases, the retiring forces have removed the track and even levelled off the embankment to hinder the Japanese advance. Practically all serviceable rolling stock is systematically withdrawn as a retreat takes place.

#### Trains Warned of Air-raids by Wireless

On the Canton—Hankow Railway the trains are now fitted with wireless receivers by which warnings of air-raids are received. The procedure is that when an alarm is given the train stops and its passengers disembark and take shelter in the fields while the train awaits the "all clear" signal before proceeding on its run.

#### Improved Communications with Burma

As a precaution in case the Chinese forces are driven into Western China, improved lines of communication and trade are being opened up. Among these is a new motor road in Yunnan, now nearly completed, to the Burma frontier at Muse. Muse is within about 50 miles of Lashio, the terminus of the Northern Shan States branch of the Burma Railways, which system should benefit from the opening of the new road.

#### Position on the Railways into Shanghai

Some 14,000 members of the railway staffs, principally of the Nan-king—Shanghai, and Shanghai—Hangchow—Ningpo lines, are now in Shanghai. Each man has received one month's pay and is regarded as suspended until further notice. An office has been opened in Shanghai where they can register for their mutual interests. This will have the advantage of locating experienced railwaymen when the time comes for again using their services.

Reports published in the Shanghai

Press on April 9 announced the re-opening of parts of the N.—S., S.—H.—N. and Kashing—Soochow lines to public traffic on the following day.

## BRAZIL

### Government Concessions and Railway Contracts

As a forerunner to the standardisation of methods and conditions of future railway surveys and constructions, and also with the object of regulating existing contracts and rail transport concessions in Brazil, the Minister of Transport has addressed a preliminary note to the State Governments of Minas Geraes and Rio de Janeiro, asking for their co-operation in the matter. It is requested that representatives from these two States should confer immediately with the Federal Government in regard to the Leopoldina Railway, which operates under separate concessions granted by the two States referred to, and by the Federal Government, and it is hoped that as a result of these negotiations the State concessions will be transferred to the Union. Once this is achieved, the multifarious difficulties attached to the issue of instructions, rates and fares modifications, supervision, and even accounts, all of which, at present, have to be done separately or in accordance with the approval of

the three governing bodies mentioned, will disappear.

## ARGENTINA

### Engineering Meetings

At the opening meeting of the 1938 session of the Buenos Aires Association of the Institution of Civil Engineers, held on April 21, the Chairman, Mr. W. R. J. Murray, M.Inst.C.E., Stores Superintendent, B.A.G.S. and B.A.W.R., delivered his inaugural address on "Railway maintenance adapted to the present economic situation." Describing the emergency measures adopted during the financial crisis to offset reduced receipts, he explained how these had been made more difficult by the increased cost of materials, less elasticity of labour, and the more expensive installations required by the Government. Mr. Murray also discussed the advantages of motor trolleys for permanent way gangs, rail welding, and track renewals by "fly packing," which method had been successfully adapted by the B.A.P.R. to suit conditions in Argentina.

At the inaugural meeting of the current session of the South American Centre of the Institution of Locomotive Engineers, held in Buenos Aires on April 29, under the presidency of the

Chairman of the centre, Mr. F. Campbell, Mr. D. S. Purdom read a paper on "Staff Education and Training in the Mechanical Department of the Argentine Railways."

### Railway Pensions Fund

The solvency of this fund is again giving rise to misgivings, the report for the year 1937, just issued by the board, indicating a very unsatisfactory state of affairs. Although it is stated that the loss of capital has been checked for the time being, the increase in the number of pensions, which is greatly in excess of the increase in the revenue, threatens before long to produce a return to the situation which existed a few years ago. The scale of invalid pensions was then considerably reduced, simultaneously with an increase in the monthly quotas from 5 to 6 per cent., but still more drastic reforms would now seem to be called for, if the stability of the fund is not to be gravely imperilled. In 1937 the total revenue of the fund rose by \$3,879,154 to \$60,098,518, but the disbursements increased in a much greater proportion, being \$6,507,211 higher than in 1936, with the result that, despite an economy of \$13,078 in the administrative expenses, the surplus of revenue over expenditure, which amounted to \$4,055,532 in 1936, declined last year to \$1,613,615.

## Kumbh Mela Pilgrim Traffic, 1938

### A Great Indian Railway Achievement

Once every 11 or 12 years a great Hindu religious *mela* or bathing festival is held at Hardwar near where the sacred river Ganges debouches from the Himalayas. This year during the *mela* period, from March 12 to April 13, a total of 347 special trains was run by the East Indian Railway to Hardwar and no fewer than 543,755 passengers detained at that station. The highest figures on any one day for inward and outward traffic were:—inward, 44 special and 7 regular trains, together carrying 68,050 passengers; and outward, 41 special and 7 regular trains, carrying approximately 80,000. On an average each special train provided accommodation for 1,500 passengers. These figures far surpass those of 1927, the last year in which this *mela* was held, and probably constitute records for any railway in India, if not in the East, operating under similar conditions, notably, with single line working.

The evacuation of the great crowds attending the *mela*, in the nine days April 13-21, when 500,000 passengers were got away in 259 special trains, was particularly noteworthy. The average number of special trains a day was 28.8 and the average number of passengers carried daily totalled 55,555. These figures will appeal to railwaymen, espe-

cially overseas, who will appreciate the organisation and preparation necessary for the efficient handling of such abnormal traffic under single line working conditions.

Some Rs. 2½ lakhs (£18,750) were spent mainly in connection with permanent passenger amenities such as wider platforms, additional overbridge, shelters on platforms, improved third class passenger hall with up-to-date vending stall and modern sanitary arrangements, retiring rooms, sanitary conveniences in circulating areas and passenger enclosures, new station building providing excellent waiting rooms with sanitary bathrooms, semi-circular station approach road, and additional *mela* platforms.

In addition, nearly Rs. 50,000 (£3,750) were spent on temporary arrangements for handling the *mela* traffic, such as increased supply of chlorinated drinking water, additional booking and inquiry offices, control towers equipped with modern broadcasting outfits in the more congested areas for the better control and movement of passengers, augmented arrangements for refreshments, the covering of passenger enclosures to afford protection from sun and rain, and the establishment of a hospital and first-aid posts. Also an additional crossing

station was put in between Jawalapur and Pathri, the line between Pathri and Aithal was doubled, additional temporary facilities were provided on the Gajroula—Muazzampur Narain section to increase the capacity of this comparatively new and direct route to Delhi, and, in order to reduce the running time of the specials to and from the Northern Punjab, a link between Aithal and Dausni was constructed enabling trains to make a connection between the E.I. and N.W.R. systems without touching Lhaksar junction.

In this connection it may be noted that the share of the traffic taken over from and handed over to the North Western Railway was considerable and no fewer than 158 special trains, destined for the Central and Northern Punjab, passed through Saharanpur during the dispersal of the pilgrims, and all regular trains were strengthened and filled to capacity.

Due to the greatly increased accommodation provided this year, passengers travelled in the maximum of comfort under *mela* conditions, and the issue of third class concession return tickets for this *mela*, a new departure, was amply justified by the additional volume of traffic carried.

The special staff employed to supervise and carry out all these arrangements and handle the traffic numbered 18 officers and 3,433 other ranks; these figures include railway medical, sanitary, and watch-and-ward staff, and railway police personnel.



## ROAD TRANSPORT SECTION

*This section appears at four-weekly intervals*

### Roads for Motors Only

IN the course of his remarks to the Mansion House Association on Transport, at the annual luncheon on May 3, Mr. Peter Bennett strongly advocated the construction in Great Britain of an experimental road for motor traffic only, with no side roads coming in, and on which pedestrians were not allowed. In Germany, he stated, such roads cost £35,000 a mile, whereas in Great Britain the cost might be £40,000 or £50,000, but in certain cases the cost of widening our existing main roads was as high as £50,000 a mile. If this scheme were adopted, we should have for the same money, two roads, namely, one for the ordinary local requirements, and a by-pass road for through motor traffic. Mr. Bennett then referred to some special tests recently carried out in Germany. On the new road between two points the distance was 92 miles, but on the old road it was 101 miles. On the old road the petrol consumption of the test vehicle was 17 m.p.g. and on the new road 29.7 m.p.g. On the old road acceleration was made 597 times and on the new road 5 times; the brake was applied 491 times on the old road and 3 times on the new; and gear changes on the old road for the first 6 miles were 2, for the next 15 miles 3, and for the next 52 miles 36. Whereas on the new road the gears were changed only 5 times in the whole distance. The clutch was operated 105 times on the old road and but 4 on the new. These tests, it may be added, were made with an ordinary commercial vehicle.

### Safeguarding Unattended Level Crossings

DESPITE the rapid progress being made in the process of elimination of the very large number of level crossings on the North American Continent, it will be many years before all such crossings finally disappear. The problem of efficient protection of unattended crossings therefore continues to be of great importance, and any attempt to secure their greater safety must arouse considerable interest not only in the United States and Canada but throughout the world. To this end a device has, it is claimed, been recently perfected and tested, which if it stands up to prolonged trial, should succeed in providing efficient warning to all road vehicles, and doubly so to all those fitted with radio sets. The device consists of a small radio transmitter placed at a level crossing and actuated by approaching trains. From it a wire is run out for about a quarter of a mile along the road on each side of the crossing, and from this wire waves are emitted to distances up to 100 ft., which can be picked up by a mechanism attached to the radio set in any car. The pick-up can be set to work at varying distances from the crossing. The radio mechanism produces a flashing red light on the dashboard, and a warning blare on the radio, sufficiently loud to drown any music that is being played. One or both of these warning devices may be fitted. But, in addition, the transmitter at the crossing provides red lights and bells for visible and audible warning to vehicles not fitted with wireless installations. Public demonstrations are to take place this spring at Chicago, and the inventors,

Messrs. Smith and Clausen, are confident that their equipment has a great future before it. Any such safeguard that may be devised should be welcomed both by railway, road, and civil authorities, and by rail and road travelling public, provided that its price is reasonable and its effectiveness beyond reproach.

### Edinburgh as a Motorbus Pioneer

EDINBURGH has recently been to the fore in the thoughts of those associated with all branches of transport as the venue of the Institute of Transport Congress, but probably few of those who visited the garages and works of the present-day motorbus undertakings realised that Edinburgh was the birthplace of the licensed urban motorbus. In a paper which he read to the Tramways and Light Railways Association as long ago as March 27, 1906, Mr. Norman D. Macdonald said: "I plead guilty to starting the first public service of autocars of any size, and for a city. Seven years ago in my native city of Edinburgh I pioneered with a fleet of cars; we failed, and lost £14,000 (the cars cost £330 to £400). But . . . most of these old cars are running still, and every day on the streets of Edinburgh." Our records support this claim and show that the first licensed motorbus service in Edinburgh was begun on May 19, 1898. In London a 10-seat single-deck electric bus was licensed on December 29, 1897, to the London Electric Omnibus Co. Ltd.; the vehicle remained licensed for almost a year, the plate (No. 1420) and the licence being surrendered on December 16, 1898. There is no evidence known to us that any service was ever run, and this bus was merely one of a number of vehicles (the others unlicensed) used for demonstration runs. Similar remarks apply to a double-deck steam bus licensed on January 21, 1899, to the Motor Omnibus Syndicate Limited. Accordingly, we think that the first motorbus service in London was the Kennington—Westminster—Victoria route opened on October 9, 1899, by the Motor Traction Co. Ltd. under the management of the late Mr. Percy Frost-Smith.

### Jersey Transport

UNTIL a few years ago, Jersey was served by two railway companies—the Jersey Railways & Tramways Limited and the Jersey Eastern Railway Co. Ltd.—but the latter undertaking, which had been sanctioned in March, 1872, and opened in August, 1873, was closed at the end of June, 1929. In its later years it had worked buses, but these were withdrawn when the railway was closed. The other railway was formed in 1869 as the Jersey Railway Co. Ltd. and the first section of its line was opened in October, 1870. The undertaking was eventually acquired by the Jersey Railways & Tramways Limited, a company incorporated on January 18, 1896. It introduced motorbuses on April 1, 1922, and exactly a year later an important rival, namely, the Jersey Motor Transport Co. Ltd., began working. In August, 1928, the J.R. & T. acquired control of the J.M.T., and in February, 1930, bought the Yellow Bus Services. The

combined bus enterprise still forms an important asset. The railway services have more recently been maintained only during the summer season, and as a fire on October 18, 1936, destroyed most of the rolling stock, the line was not re-opened last summer. Eventually, the decision was taken to abandon the railway, and in July, 1937, George Cohen, Sons & Company bought the line for demolition. The J.R. & T. has now been wound up and on October 9, 1937, a holding company called Jersey Road Transport Limited was incorporated to take over the shares in the Jersey Motor Transport Co. Ltd. The recent report of Jersey Road Transport Limited, covering the period from the date of incorporation to December 31 last, showed that £1,976 had been received as dividends from the Jersey Motor Transport Co. Ltd. in respect of the year 1937. Under the arrangement with the railway company, the railway shareholders were allotted shares in J.R.T. ranking for dividend from November 16, 1937, when the J.M.T. shares were passed over to this new holding company. A tax-free ordinary dividend of 5 per cent. was paid by J.R.T., and thus the former railway shareholders continue to receive an income from the bus side of their enterprise, although there are no longer any railways in Jersey.

### Census of Trunk Road Traffic

**A**RRANGEMENTS for a quarterly census of traffic at selected points on trunk roads have been made by the Minister of Transport, and the County Councils throughout the country have been asked to co-operate. Every census will last a week; the first began on Monday, May 23, and there will be three others, of which the last will be taken in February of next year. A comparison of the figures obtained in the respective quarters will reveal the seasonal variations in the volume of traffic and thus provide valuable material on which to base future trunk road improvements. The traffic enumerators, some 1,000 strong, work in relays and record all classes of vehicular traffic, and in addition, where there is no footpath or only a very narrow one, they also take a pedestrian poll. The census is taken at nearly 400 points, at more than half of which the counting is continuous throughout the day and night; at the remaining points there will be a 16-hour count including every day at 10 p.m. Certain points have been selected in order to show the directional movement of traffic. The same points will be watched every quarter, but in August there will be an additional 500 points, as the August census will coincide with the triennial census of traffic on Class I roads generally, and for the sake of continuity of record it is desired to retain as far as possible the same points at which a census was taken in 1935.

### Health of Dresden Busmen

**N**EXT to Berlin, Dresden has the largest motorbus traffic of any German city, but the fleet comprises only 75 buses and two trailers. Germany, as the birth-place of electric traction, relies mainly on street tramways for its urban traffic, and thus is without extensive experience of the problems connected with the working hours and conditions of bus staff on town service. At Dresden there are 165 drivers and 161 conductors, drawn chiefly from experienced tramwaymen. They have expressed a wish to work in continuous shifts, but the traffic requirements make it difficult to arrange for that, and the company has long been of the opinion that divided shifts are better from the health viewpoint. The waiting times at termini are rather long at Dresden, practically a quarter of the running time, but they cannot be regarded

as providing any real relaxation. In 1932 a rest interval of from 40 to 60 min. was inserted in every 8-hour shift, to be spent at the Central railway station depot, where special accommodation was constructed for the men. Meal, reading, and rest rooms (the last named with camp bedsteads) are provided, with private lockers, washing equipment, and so forth, and a display of all official documents and notices, making it unnecessary to go to a depot to consult them. Telephone communication with the depots and shops is provided, so that assistance can be asked for from the rest house. Although it is too early to state definite results, the sick list has already been reduced, and the bus services are now better in this respect than the tram services, although formerly the reverse obtained. The members of the staff, rather unsympathetically inclined to the arrangement at first, now express satisfaction with it.

### Closing Unremunerative Railways in North America

**T**HE rapid expansion of road transport in the United States has, since 1917, resulted in the closing of a large mileage of unremunerative railways annually. Prior to that year such closures were insignificant, but in it some 942 miles owned by the main lines were abandoned. During the 21 years 1917-37 no fewer than 20,212 miles—a figure slightly in excess of the total railway mileage in the whole of Great Britain in 1937—were closed to traffic, as against only 10,434 miles of new line opened, so that the aggregate main-line mileage has decreased by 9,778 during this period. In 1937 1,140 miles were abandoned, a figure greater by 992 miles than that of new constructions completed. Also that year was the sixth in succession, and the seventh altogether, in which the closing of railway mileage exceeded 1,000. The area most seriously affected by this policy during the years 1932-37 was the Middle-West, where on an average over 500 miles went out of use annually. The South-Eastern and South-Western States come next in order, with averages of 338 and 302 miles ceasing to operate each year, while on the other hand, only 77 miles was the corresponding figure for the New England States. The Canadian railways thought fit to close 399 miles of line in 1936, by far the highest figure for the Dominion, but in 1937 only 67 miles went out of operation.

### Road Transport in Holland

**T**HE question of transport by road in Holland is the subject of a recent article by Mr. S. A. Reitsma in the *Financial and Economic Review* of the *Amsterdamsche Bank* for April. It is recalled that tolls on national roads were not abolished in Holland until the Act of July 22, 1899. After the war the number of vehicles on the roads grew very rapidly, and the discussion at the first Netherlands Road Congress of December, 1921, led to the introduction of the Road Tax Act at the end of 1926 by which a Road Fund was set up, out of which the cost of improvement and maintenance of the roads was to be met and which would derive its income from the Road Tax. The income of the fund soon proved insufficient and the tax on motors was increased in January, 1935, while at the same time a temporary special duty was imposed on petrol. The bicycle tax, with its yield of over 7 million florins, continued to go into the fund. In 1935 the Road Fund was transformed into a Transport Fund, and in 1936 an increase was imposed on the petrol excise, earmarked for the bridges over the big rivers and a tunnel at Velsen. Meanwhile, the improvement of roads is said to be costing

enormous sums. There are 3,300 km. of primary roads, 4,400 km. of secondary, and 18,000 km. of third-class roads, and to what extent the cost of maintenance is covered by the imposts levied on motor transport is not known exactly. The Central Advisory Committee of the Transport Fund was asked to consider this but has not yet issued a report. An outstanding feature of road transport in Holland is that no concession or licence is required for the conveyance of merchandise by motor

vehicle, no regulations governing wages and conditions of labour exist, and the desirability of making liability compulsory is still under discussion. Under this regime of freedom there is cut-throat competition between the motor transport undertakings themselves, an alarming increase in the number of accidents, and grave prejudice to the railways, whose ever-increasing deficits have to be made up by the State. The situation is further reviewed in an article on page 1066.

## Overseas Notes

### Travancore Road Transport Services

The new State-owned passenger transport service in Travancore was recently inaugurated, amid enthusiastic scenes, when the Maharaja of Travancore, accompanied by the Maharani and the Elaya Raja, rode in a Commer diesel-engined bus at the head of a long procession of 33 other buses of the same make over the three-mile route from Trivandrum to Kaudiar Palace. Regular services linking Trivandrum, Cape Comorin, Colachel, Eraniel, and Nagercoil came into operation on the following day. These are a preliminary to a more general scheme of Government-owned and managed transport throughout the State. It will be recalled that some months ago Rootes Limited, of London, supplied a fleet of sixty Commer "PNF3" diesel-engined chassis to the Government of Travancore in connection with this important scheme. Travancore is the first State in Southern India to operate a State-controlled transport system, and in doing so is following the example of Hyderabad.

### The Nizam's State Railway Road Services

The 20 new diesel-engined buses recently added to the road fleet of the Nizam's State Railway are proving very popular. Also the carriage of mails by these road services to and from country districts is speeding up delivery in no small measure. Bus fares are now standardised throughout the Nizam's dominions at 6 pies ( $\frac{1}{3}$  d.) a mile, except in Hyderabad City where they are slightly lower. The following figures in lakhs of rupees indicate the financial results which, it is estimated, will have been achieved during the financial year ended March 31, 1938, as compared with former years:—

	1935-36	1936-37	1937-38
	Actual	Actual	Forecast
Gross earnings .. .. .	13.34	22.96	29.34
Working expenses .. .. .	10.93	19.15	27.36
Net earnings .. .. .	2.41	3.81	2.08

Co-ordination between road and rail services is not only providing a better and cheaper means of transport throughout the Nizam's dominions, but is also opening up backward areas and developing the country generally. Some 238 connections are now effected daily between road and rail services. Organised road and rail excursions are a feature of this system. About 10,000 passengers patronised them during the year 1937-38, parties coming from as far afield as Bombay to visit the Ajanta and Ellora tourist area, which is served only by the N.S.R. road service.

The merchants of Secunderabad, Hyderabad, and Warangal have not been slow to take advantage of the door-to-door collection and delivery services in those centres, introduced some 14 months ago. These services are very popular and efficient, and it is stated that goods sent by them reach their destinations before the railway receipts, which are sent by post.

### Abandoned Canadian Railway Formations to be Used as Roads

The Roads Department of Quebec Province has filed application with the Board of Railway Commissioners for permission to acquire the Canadian National Railways abandoned right-of-way between Farnham and Iberville. The Roads Minister of the Province stated that it was the intention of his department to convert the right-of-way into a first-class asphalt or concrete road which would save six miles between cities. The rails and sleepers have been removed for some

time, but the ballast will be used in the foundation work, with consequent economy in construction.

Another, and more important, project involving a railway right-of-way, is also under consideration by the Roads Department. It concerns the C.N.R. line from St. Isidore to the American border, over which the administration has for some time been anxious to discontinue operation. An application is now being filed with the Board of Railway Commissioners to permit of the closing of this line, and the Roads Department is considering filing application to acquire that right-of-way also, should the request of the railway be granted. A first-class highway would then be built to shorten the distance between Montreal and Plattsburgh, N.Y., by from 16 to 17 miles.

The link would run from the Mercier bridge at Caughnawaga in St. Isidore, through St. Remi, St. Michel, Sherington, Barrington and Hemmingford before touching the American line, where it will meet a paved road to Plattsburgh. The scheme includes the proposal that before the rails are removed they should be used for the transport of road material; and as the new road would be built on an embankment, it would need much less expenditure for winter maintenance. There would be no additional expropriation necessary, and all the above towns would be served by an excellent highway.

### Rødby-Femern Ferry Route

For some time past there have been negotiations between the Danish State Railways and the Deutsche Reichsbahn concerning a new road ferry route to connect Germany and Denmark by way of Rødby on the Danish island of Lolland and Puttgarden on the German island of Femern. The scheme for this ferry route is not new. For many years it has had its advocates in both countries, and there have



been committees to further the plan. With the opening last October of the Storstrøm road and railway bridge, the demand for the Rødby—Puttgarden route as an automobile ferry route has increased. The sea crossing would be one hour, and many trips would be run daily. The road journey between Copenhagen and Hamburg would be greatly shortened by this new service. There is still a hindrance, however, namely the lack of a dam between Femern and the Continent.



## Road-Rail Co-ordination in Holland

*Closing of wayside stations permits acceleration of trains, and these points are now served by buses more frequently than was possible by the railway*

SINCE the war the Netherlands Railways Company and its predecessors have suffered severely from road competition, but whereas the numbers of passengers travelling by stopping trains steadily diminished, those by the fast expresses remained nearly constant. Experiments proved that the replacement of slow by fast services secured a recovery of traffic from the roads. For instance, all intermediate stations on the Deventer—Zwolle line (18½ miles) were closed in 1936, and the non-stop expresses were retained and augmented. A privately-owned bus service took over the whole of the intermediate traffic,

development of one that has been in train for some time past, as illustrated by the fact that the number of stations and halts on the railways in Holland open for passenger traffic, fell from 860 in 1926 to 560 in April last; since May 15 only 412 are served by passenger trains. During this period (1926-37) 700 km. of railway were closed to passenger traffic owing to road competition.

The railway authorities accept the fact that local services are better maintained by buses, provided that they make frequent connections with fast trains at the larger centres, and are directing their policy accordingly. In order to enable would-be passengers to ascertain early how to reach points not served by railway stations, the Netherlands Railways arranged to issue a combined road and rail timetable on May 15, showing all bus and train connections. Co-operation between the railway and bus managements has been voluntary throughout.

The legislation of 1937 for the licensing of road passenger transport conceded no priority rights to existing transport undertakings, such as railways or tramways. Consequently, complementary bus transport, as run by the railways in other countries, has developed only to a moderate extent. The effects of the Act on motorbus transport may be judged by the relative figures. There were 3,094 motorbuses with 57,129 seats in service on January 1, 1928, while the number on August 1, 1937, was 3,841 with 97,661 seats. These figures are of course no indication of the number of passengers carried, as the trip frequency has been much increased.

As regards goods transport there were over 10,000 motor lorries in use in January, 1925, a number which had increased to 47,160 by August 1, 1935, and to 49,156 by August 1, 1937. Although, as remarked on page 1064, the transport of merchandise by road has never been subject to licence or regulations, it is not because the subject has not been considered. It is said to be the intention of the Government to subject all goods transport, including cargoes by inland navigation, to a system of licences. This, if it materialises, will be an important step towards co-ordination. At present almost complete anarchy reigns. A declining volume of traffic, accompanied by the expansion of the means of transport, has resulted in violent competition, affecting, although in varying degree, the profitability of all undertakings.

In 1935 the Government defined its policy, based on the principle that the whole of transport should be regarded as one unit. In accordance with this policy, no new railways or canals will be authorised and no monopolies will be granted for road transport. Unfortunately, the delay in laying down a fixed policy has allowed the growth of vested interests, complicating a solution. On the other hand voluntary co-operation has been, and is, playing an important part in abolishing unprofitable competition and in at least one district there is an agreement between rail, tramway, road, and canal.

A second form of co-ordination is where one form of transport acquires the control of another; there are instances of this also. The third form is, of course, by legislation, imposed from above by the Government. What is certain is that the present excess of transport facilities cannot continue for ever. Nor does it seem practicable to wait until all the warring elements can come to voluntary agreements.



Diagrammatic map of the Dutch railway system, with crossbars showing position of stations closed on May 15

its services connecting with the fast trains at Deventer and Zwolle. This change not only attracted more end-to-end traffic, but the intermediate places also obtained a much more frequent bus service than the stopping trains had previously provided, and in cases where there was any increase in over-all times it was very small, and its disadvantage was amply outweighed by the increased frequency of the combined service.

The success of this experiment induced further investigation into the possibilities of abolishing stopping trains on other sections of line, and of using the vacant paths of the slow trains for increasing the frequency of the express services. As a result, 148 wayside stations were closed for passenger traffic on May 15 when the new summer timetable came into force as announced in our Overseas columns on page 747 in THE RAILWAY GAZETTE of April 15. The distribution of these stations is shown by the accompanying map.

This bold policy is not really new; it is actually a

## Highway Development of Greater London

*Comprehensive 30-year scheme outlined in the Bressey Report, designed to relieve Central London of transit traffic by means of ring roads and new thoroughfares involving viaducts and tunnels*

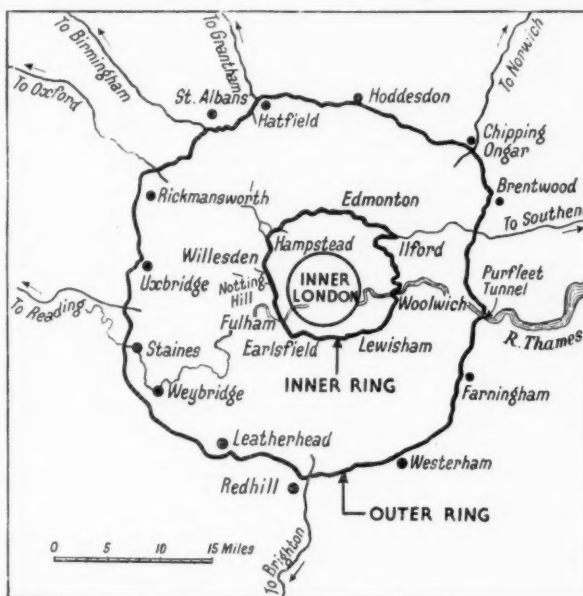
**S**CHMES for re-planning the Metropolis are by no means new, and, when thoughts are turned in this direction, memories are inevitably evoked of the plans outlined by Sir Christopher Wren for re-modelling the London of his day after the Great Fire of 1666. At that time he was concerned with an area covering about one square mile, and on every subsequent occasion that the matter has been considered the area has grown, until now, in the recently-published Bressey Report, the territory involved extends over nearly 2,000 square miles, containing nearly one-fifth of the total population of Great Britain, and concerning some 150 local authorities and regional committees.

Despite the apparent lack of ordered planning which is revealed by a cursory examination of the map of London, developments have been by no means haphazard, and at any rate in the east-west direction the existing facilities show considerable foresight on the part of earlier generations which could scarcely have envisaged mechanical road transport. For example, the important thoroughfare originally known as the New Road, and now comprising the Marylebone Road, Euston Road, Pentonville Road, City Road, &c., was built as long ago as 1757 but still provides a broad and useful highway, which is yet not used to capacity, and in fact has proved of considerable value as an authorised route for motorcoaches from the north wishing to call at King's Cross coach station and then proceed to the Victoria coach station. Again, the schemes which resulted in the construction of Shaftesbury Avenue and Charing Cross Road were well planned, and have stood the test of some sixty years. Moreover, the continuation of Knightsbridge through Piccadilly and Shaftesbury Avenue resulted in the development of a through route traversing Theobalds Road, Clerkenwell Road, and Old Street, which we believe was designed with an eye to the movement of troops across London without passing along the congested streets of the City. The valley represented by Farringdon Road long provided a difficult east-west crossing, which was eventually solved by the construction of Holborn Viaduct opened on November 6, 1869—an early example of main roads crossing on different levels, which although built originally with the object of avoiding steep gradients, has also demonstrated the utility of such layouts in avoiding congestion. The successive construction of Victoria Street, Westminster (opened on August 6, 1851); the Victoria Embankment (opened on July 30, 1868); and Kingsway (opened on October 18, 1905); further exemplify progressive highway development within the heart of the Metropolis.

A glance at the present road map of Greater London gives a vivid impression of a score of conspicuous highways leading from every part of the outskirts into the central area, but means of avoiding the centre are difficult to trace on the map and even more difficult to find on the ground. As a result, many drivers bound from one quarter of London to another tend to pass across the central area and add needlessly to the congestion there for want of unmistakable avoiding roads. In December, 1934, the Minister of Transport appointed Sir Charles Bressey, with Sir Edwin Lutyens as consultant, to undertake a comprehensive survey of the highway development

required to meet future traffic needs of Greater London and to prepare a highway development plan for the area. It is the result of their work during the past three years which has now been made available in a forty-thousand word report based on a thirty-year forecast of London traffic needs, in the light of estimates of the future population of Greater London supplied by the Registrar-General.

Broadly, the schemes are concerned mainly with diverting from the central area traffic which has no reason for being there, and leaving the existing thoroughfares to meet local needs. Foremost among the recommendations made in the report, therefore, are a series of ring roads designed to deflect traffic from the centre of London; a



*Approximate course of two outer ring roads recommended in the Bressey Report*

new east-west arterial road 12 miles long; a new north-south road; and an extension of Victoria Embankment westward to Putney Bridge and eastward to the Tower, bringing its total length up to eight miles. The accompanying sketch map shows Sir Charles Bressey's rings of outer circular roads. The innermost of three concentric rings is a loop-way round the City, relieving the intense pressure on the Mansion House intersection. Proceeding outwards, the next ring is formed by the North Circular Road, coupled with a South Circular Road, the circumference of the complete circle extending from Finchley in the north to Catford in the south, and from Ealing in the west to Ilford in the east; this is associated with a new vehicular tunnel at Woolwich to supersede the present ferry. The outermost ring consists of the North Orbital and South Orbital Roads (a circuit of 125 miles), skirting Hatfield in the north, Purfleet and Dartford in the east, Reigate in the south, and Egham in the west.



1. East-West Connection.
2. South Circular Road.
3. City Loopway.
4. Aldgate By-Pass and Cable St. widening.
5. City Outer Circle.
6. Old Street By-Pass.
7. Blackwall Tunnel Duplication and improvement of N. and S. Approaches.
8. Rotherhithe Tunnel Duplication and connection to South Circular Road.
9. Cromwell Road Extension.
10. South Kensington-Horseferry Road.
11. Mayfair-Soho Route (Oxford Street Relief).
12. Mayfair North and South Route (Dond Street Relief).
13. Piccadilly Circus Improvement.
14. Hyde Park Corner Layout.
15. Kensington Gardens Tunnel.
16. Wandsworth Bridge Road Extension to Watford By-Pass.
17. Chelsea Embankment Extension to Putney Bridge.
18. Elevated Road. Blackfriars-Brixton and Extension to South Circular Road.
19. Blackfriars-King's Cross-Holloway.
20. Albert Embankment-Camberwell New Road.
21. Battersea Bridge South Approach Extension to South Circular Road and to Victoria-Croydon-Coulsdon Route.
22. South Eastern Outlet with spurs to Shirley and Dartford Tunnel Approach.
23. New Kent Road-Catford.
24. Shooters Hill By-Pass Extension (New Cross Relief Route).
25. Link between Kingston By-Pass and South Circular Road.
26. Colliers Wood-Streatham.
27. Lambeth Bridge-St. George's Circus-London Bridge.
28. London Bridge-Rotherhithe.
29. Bromley By-Pass.
30. North-South Road (Lea Valley).
31. Lea Bridge Rd. Extension to Essex Rd.
32. London Docks to Stamford Hill.
33. New Cambridge Road Extension to Newington Green.
34. Woolwich Ferry (Northern Approach) and River Crossing-Woolwich.
35. West India Dock Road Extension to Stamford Hill.
36. Harrow Road Improvement.
37. Northern Outlet.
38. Swiss Cottage-Spaniards Road.



This circuit incorporates the Lower Thames tunnel and a new bridge over the Thames at Egham, relieving Staines bridge. This orbital road is closely associated with the proposals for London's future Green Belt.

Apart from these complete circles other proposed routes are designed to fulfil a similar purpose of deflecting drivers from the centre to the periphery. Among these projects, first place is given to a wide east-west arterial route, 12 miles long, passing north of the City and connecting Western Avenue, Hammersmith, with the Eastern Avenue in Essex, thus creating an unobstructed parallel to the Oxford Street line of communications. The same purpose of deflection lies behind the proposal that Wandsworth bridge (now under reconstruction), should not only lead traffic to the South Circular Road, but should be provided with an improved northern approach, curving round the west of London to Edgware Road and the Watford By-Pass in the Cricklewood district. Battersea bridge is incorporated in another curved route, extending from Tooting Common in the south to Marylebone in the north, passing in tunnel under Kensington Gardens, Kensington Road, and Bayswater Road. Thus, north-bound traffic would be given an unimpeded course under two of the principal east-west thoroughfares, and relief afforded to Church Street, Kensington, and to Park Lane, which lie nearly two miles apart and are now overloaded with north-south traffic.

In the dock district and the Lower Thames-side, new roads are recommended, so placed as to divert traffic from the City; the most important of these routes leads through Canning Town northwards up the Lea Valley to the North Circular and the North Orbital Roads. To increase the utility of the Thames tunnels at Blackwall and Rotherhithe, the duplication of which is advised, the report urges that their approaches on both sides of the river should be improved and extended, so that traffic may gain uninterrupted access from the remoter parts of the Metropolis. By this means, a direct north-south route would be opened from Victoria Park, Hackney, via the Blackwall tunnel to the South Circular Road, near Eltham; similarly, the Rotherhithe tunnel would form part of a route ten miles long from Stamford Hill to the South Circular Road, near Forest Hill. Thanks to their connections with other new thoroughfares, these proposed routes and the tunnels to which they would give access form, in effect, part of the comprehensive series of ring roads.

A scheme designed to add as greatly to the amenities

of London as to the conveniences of transit, is the proposed extension of the Chelsea Embankment south-westwards to Putney bridge. Taken in conjunction with existing embankments and the southern portion of the suggested City Loop-way, a riverside route, eight miles long, would become available, extending from Putney bridge to the Tower. From here eastwards, an Aldgate by-pass is planned to lessen the congestion that prevails on the eastern fringe of the City at Gardiner's Corner.

The north-south crossing of London is intended to be facilitated by a project connecting the Holloway district in the north with the South Circular Road, near Tulse Hill. This road would be carried on a viaduct for a considerable part of its length, alongside railways wherever this is feasible. In south-east London a recommendation is made for a westward extension of the Shooters Hill by-pass so as to create a new route paralleling New Cross Road and Blackheath Road.

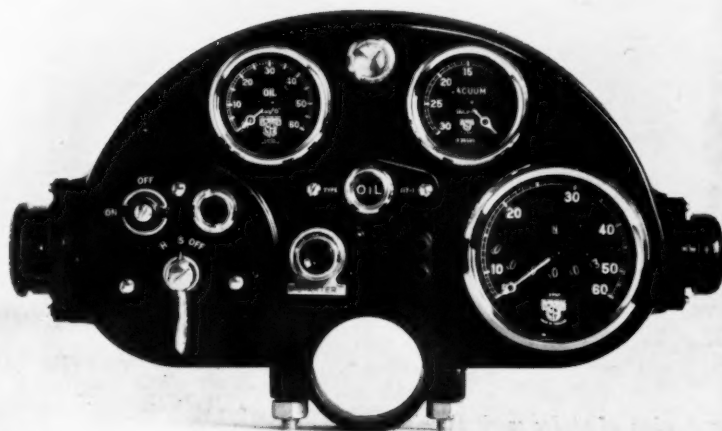
Westminster and the adjoining areas are affected by proposals for a new Mayfair-Soho route (partly in tunnel), the improvement of communications between Lambeth bridge and South Kensington, and the creation of a parallel road for the relief of Bond Street. A new route to Croydon aerodrome figures among the recommendations, as well as a new south-eastern outlet from London, passing under the high ground adjoining the Crystal Palace.

In Outer London, the report advocates building several new routes of parkway type through open country, to give relief to existing main roads, the modernisation of which may present difficulty. Among the ultimate destinations of these parkways are Birmingham, Grantham, Norwich, Brighton, and Winchester.

Of the long list of recommendations contained in the report only a few have been cited. Some are obviously less urgent than others, as must be expected when a thirty-year forecast is attempted. The transformation which Greater London has undergone during the past thirty years, however, forbids any complacent supposition that the coming generation will be immune from equally formidable changes. The report indicates the steps that were taken to ensure adequate investigation and consultation and pays tribute to the courteous assistance tendered by the numerous public bodies and their advisers throughout Greater London. Without this assistance it would have been impossible to give due weight to the local considerations which have necessarily to be taken into account.

## Instrument Panel for Commercial Vehicles

The C.A.V.-Bosch Type No. 117 commercial vehicle switchpanel which we illustrate is representative of the range produced by this maker for various requirements. Further general particulars of these panels will be found in a review of a new C.A.V.-Bosch catalogue on page 1071. The No. 117 panel is designed for mounting on the steering column, and within the limits of its compact layout accommodates ignition, lighting, dimming and starter switches, horn button, and instruments. The number and type of the latter can be varied as required, and any vacant sockets covered by inconspicuous blanking plates. The example shown indicates oil circulation both by a pressure gauge and a warning light, but probably only one instrument would be required.



## Rapid Bridge Erection

*Special problems overcome in erection of steel bridge over L.M.S.R. and canal near Derby*

A NOTABLE feat of rapid bridge erection was recently carried out in connection with Road No. 4 of the town planning scheme between Spondon, Derby, and Alvaston which is carried over the L.M.S.R. and the Derby Canal by a five-span steel bridge at Spondon. The bridge is 260 ft. 3 in. long on the centre line, with a width of 80 ft. 0 in. between parapet walls, and has two footpaths, two cycle tracks, two 20 ft. roads and a centre island. The curve of the centre line of the road is 928 ft. radius.

The total weight of the steelwork is 610 tons. Each of the five spans consists of fourteen riveted plate girders (70 in all) varying in length from 44 ft. 0 in. to 65 ft. 0 in., and in weight from 5 to 11 tons. The depths vary to

suit the curvature of the structure and to accommodate footpaths, pipe-bays and services. The north abutment is alongside the Derby Canal, and the south abutment on the railway boundary.

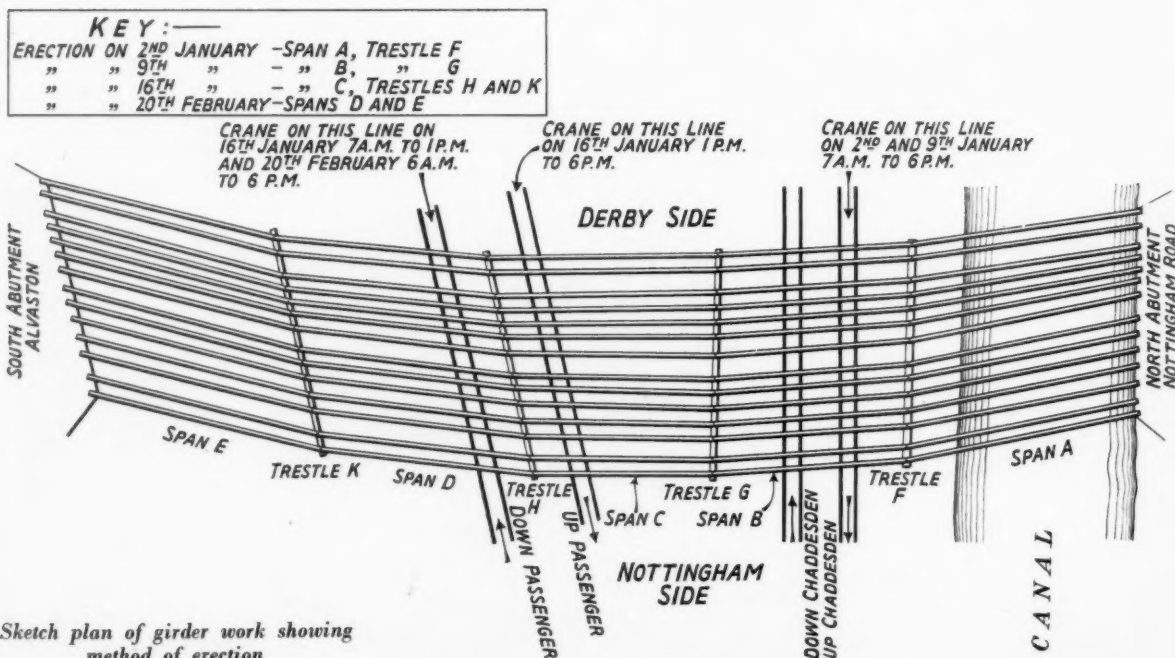
Erection was possible only on Sundays, and was completed on four Sundays: January 2, 9, 16 and February 20, in a total erection time of only 40 hours, with the assistance of the railway company's 36-ton breakdown crane.

### Method of Erection

The line diagram indicates the method of erection. Four steel trestles, F, G, H, & K were placed at intermediate positions on the mass concrete foundations, at varying



Showing the progress of erection after the third Sunday. Trestles F, G, and K have been erected together with spans A, B, and C



Sketch plan of girder work showing method of erection

angles to suit existing positions of the canal and the railway tracks.

Erection began at the north end with Span A and Trestle F. As the crane available could not reach out to land girders further than the trestle, a temporary bridge on a pontoon was floated on the canal; this supported a trolley upon which the front end of each girder was carried and rolled across, the railway crane assisting. Each girder, after it had crossed, was skidded across the abutment and trestle to the correct position. This work occupied the available time (7 a.m. to 6 p.m.) on January 2.

The following Sunday, Span B and Trestle G were erected, the girders for these being lifted into their correct positions by crane; this occupied from 7 a.m. to 6 p.m. On the next Sunday, January 16, Span C and Trestles H and K were erected, the crane occupying the down track from 7 a.m. to 1 p.m. and the up track from 1 p.m. to 6 p.m.

To enable the south spans to be erected, the temporary bridge, previously used on January 2 for the erection of the girders over the canal at the north end, was erected in the field, and the girders rolled out in a similar manner. A temporary end prow was in this instance attached to the railway end of the girders to allow the crane to reach and land at the maximum safe radius. The girders were afterwards rolled across the abutment and trestle on small steel



View from the south end looking through the trestles; trestle K in the foreground

trolleys running on rails. The erection of girders on Spans D and E (Trestle K having previously been erected) occupied the available time on February 20.

The whole of the fabrication of the steelwork and its erection was carried out by the Butterley Company Limited.

## British Motorbus Finance

SINCE the publication of our chart showing the principal shareholdings at January 1 last in the railway-associated provincial bus companies (see our issue of March 11), there have been increases in the ordinary share capitals as follow:—

**Eastern Counties Omnibus Co. Ltd.**—The nominal capital has been increased from £900,000 to £1,000,000 by the addition of £100,000 in ordinary shares. Since January 1 last 83,931 ordinary shares have been issued at par. Of the £672,069 issued ordinary share capital at the beginning of the year the L.N.E.R. held £163,267; the L.M.S.R. £22,422; Tilling & British Automobile Traction Limited £185,689; and United Automobile Services Limited £290,041.

**United Automobile Services Limited.**—The nominal capital has been increased from £1,500,000 to £1,650,000 by the addition of £150,000 in ordinary shares. At a meeting on February 22 it was resolved to capitalise £177,979 of the general reserve and to issue 177,979 ordinary £1 shares as a bonus in the proportion of 1 to 7 on the existing ordinary shares. On January 1 the issued ordinary share capital was £1,245,850, of which the L.N.E.R. held £610,956, and Tilling & British Automobile Traction Limited held £610,956.

**West Yorkshire Road Car Co. Ltd.**—The nominal capital has been increased from £900,000 to £1,000,000 by the addition of £100,000 in ordinary shares. On January 1 the issued ordinary share capital was £675,000, of which the L.M.S.R. held £167,865; the L.N.E.R. £167,865; and Tilling & British Automobile Traction Limited £335,730.

## Publications Received

**Switchboards and Control Boards.**—An illustrated catalogue from C.A.V.-Bosch Limited, of Acton, London, W.3, shows a variety of fully equipped instrument panels for dashboard or steering column mounting in motor vehicles; also switchboards, with or without instruments, for controlling the interior lighting of buses, coaches, railcars, and so on. All the driver's instrument panels are provided with internal illumination, and most are supplied in black finish with chromium-plated parts. Neat appearance has been specially studied, those panels designed for mounting on the fascia board being arranged to fit flush. A typical panel for steering column mounting is illustrated on page 1069. The catalogue also lists dynamo control boards, comprising regulator, cut-out, and fuses.

**Overhead Equipment for Trams and Trolleybuses.**—British Insulated Cables Limited, of Prescott, Lancs., supplies all necessary equipment for overhead distribution of electric power on tram and trolleybus routes, and in a new illustrated catalogue, of which we have received a copy, lists a representative selection of such fittings. Appearance has not been overlooked in the design of poles and standards, the requirements of simple erection and strength having been combined with neatness of outline. The company has also had considerable experience in the supply and erection of overhead lines for railway traction, and a view reproduced in the catalogue of B.I. standards on an electrified section of the Great Indian Peninsula Railway demonstrates how successfully the considerations just mentioned have been realised. In addition to standards and insulators, the catalogue shows numerous designs of overhead frogs and crossings to connect up the overhead lines serving junction and depot layouts.



## Motorcar Transport to the Isle of Wight

*A new facility was introduced on May 1 when the Southern Railway introduced the "Lymington" into service between Lymington and Yarmouth*



ON May 1 the Southern Railway placed in service between Lymington and Yarmouth (Isle of Wight) the new diesel-engined vessel *Lymington*. This vessel, which was built by William Denny & Bros. Ltd., was launched on April 1 at the Leven shipyard by Mrs. R. P. Biddle, wife of the Docks and Marine Manager, Southern Railway (as recorded on page 724 of our issue of April 8). It is the first in British waters to be fitted with the Voith-Schneider system of propulsion, enabling rudders to be dispensed with. Each propeller comprises six blades mounted as a unit, and revolving in the water in approximately the vertical plane. Direction is controlled from the bridge by varying the angle of the blades in relation to the centre of the unit.

The *Lymington*, which has been built to comply with the Board of Trade requirements for an ST4 certificate, is designed for passenger, motorcar, and cattle traffic, and thus introduces a new facility to this service, for in the past motorcars passing between Lymington and Yarmouth had to be loaded into barges and towed between the mainland and the island. With an overall length of 148 ft., a moulded breadth of 26 ft. and a maximum loaded draught of 5 ft. 8 in., the ferry has accommodation for 400 passengers in two classes; lounges and refreshment bars are provided. The main deck of the vessel accommodates 16 to 20 motorcars, which can be embarked or disembarked on to slipways ashore by means of electrically-controlled gangways at each end of the ship. Passengers board or leave the ship by the same means, or by gangways from the sun deck.

The main propelling machinery consists of two 6-cylinder four-stroke cycle trunk piston type diesel engines, built by W. H. Allen Sons & Co. Ltd., Bedford. Each unit is capable of an output of 200 b.h.p. when running at a speed of 530 r.p.m., and the installation gives the vessel a speed of 11 knots. The two Voith-Schneider propellers are arranged one at each end, the forward unit to port and the aft unit to starboard. By means of this form of propulsion the vessel is enabled to move ahead, astern, or broadside on, if required. Engine-room auxiliaries include two Ruston 3-cylinder diesel engines driving 19.5-kW. Laurence Scott generators.



Unloading a motor lorry and Southern Railway container from the "Lymington" at Yarmouth, Isle of Wight

## Metallised Bodies for New Green Line Fleet

*Some 266 coaches mounted on A.E.C. Regal chassis are being introduced by the London Passenger Transport Board. The type of body, known as "10 T 10," is of metal and wood composite construction*

**T**O replace certain units of the London Passenger Transport Board's Green Line coach fleet which are now considered obsolete, 266 vehicles are being delivered into service from the board's Chiswick works. These vehicles, which, of course, are single-deckers, are mounted on the A.E.C. Regal chassis known in the board's fleet as the "T" type, but the bodies differ in construction from any previously built at the Chiswick works. In

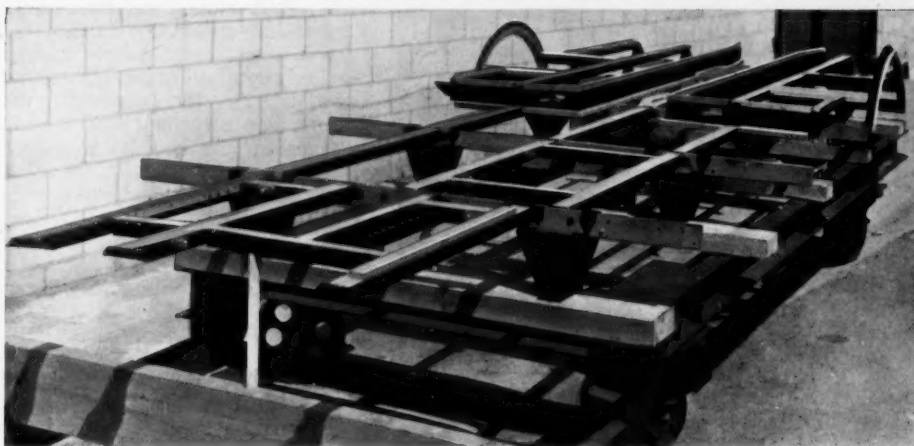
many respects they follow the broad principles of previous London Transport coach design without adopting all-metal construction, which sometimes involves difficulties in the attachment of various parts, such as panels and fittings. The new bodies are, to a large extent, "metallised." All longitudinal members are composed of a metal section packed with wood, and cross-bars and pillars are of flitched wooden beams. All such parts as gangway support bars, chair bars, waist rails, seat rails, and cant rails are of metal. The new body is known as the "10 T 10" type, and by reason of its composite form is expected to provide fewer difficulties in replacement of parts. All parts of the framework are bolted together, and can be removed, repaired, or replaced independently as units. This method has been adopted in view of difficulties experienced by London Transport in carrying out renewals and replacements on certain types of metal body in which the framework is welded.

An interesting point in the construction of the side frame is the method of attaching the waist rails to the pillar junction brackets. This is done by using three-bolt recesses in the ends of each rail into which similar recesses on the junction bracket register. Hexagon-headed bolts are then used to fasten the two together, with the result that a flush finish waist rail is employed; and hexagon-headed bolts can be used at the same time to facilitate quick and easy replacement, while maintaining as much strength as possible.

### Seating Accommodation

The vehicles were designed in the first instance to seat 30 passengers, but arrangements have now been made whereby 116 of the coaches have a modified seating arrangement to accommodate 34, a further crosswise seat having been added to each side of the vehicle. Every seat faces forward. In an attempt to maintain a level floor and to reduce platform heights, while also allowing the use of heating ducts beneath the floor, a high floor level has been arranged. This is effected by the use of high brackets which are bolted to the chassis, and to which in turn the body also is bolted.

For some years past London Transport has been using rubber for the wings of most of its vehicles. This has



*Chassis framework of new Green Line coach in course of erection*

consisted usually of a narrow strip of rubber, but upon these coaches the design of the wings is more shapely than that of previous types. The wings, which have been supplied by the Dunlop Rubber Co. Ltd., are in a green colour, which is prepared so as to match as nearly as possible the colour of the side panels.

### Ventilation

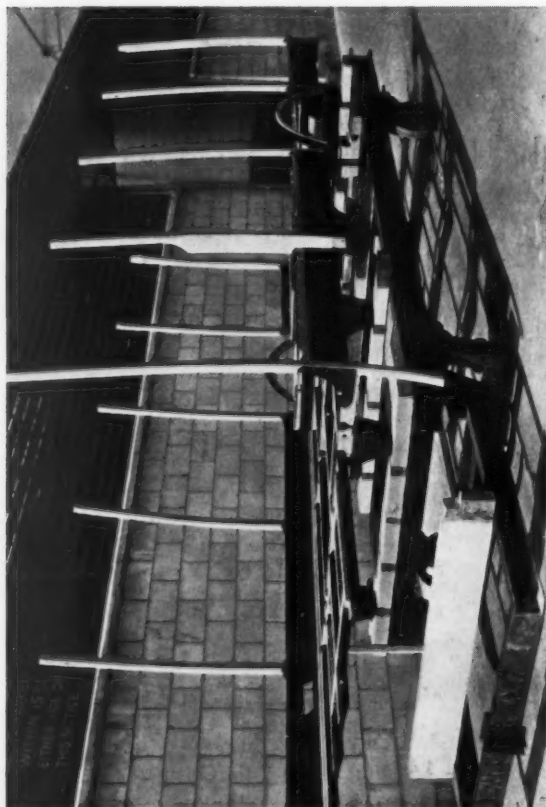
A scheme has been devised whereby hot or cold air can be conducted into the body at various points. The air is taken into the vehicle by means of an intake situated upon the roof toward the rear, whence it is conducted down the rear panels between the inner and outer skins, ultimately passing through a fan, where it makes contact with a heating element. From this point, the air is radiated to various points upon the body, which it enters through baffles inserted into the coving panels beneath the seats. By means of this equipment a constant temperature can be maintained, and with the use of a thermostatic control regulator a constant setting of either hot or cold air at any reasonable degree can be maintained. In summer the valve will be adjusted so that only cold air enters the body, and in the winter it will be re-adjusted to allow the ingress of heated air.

Several types of sliding door are being used upon this fleet, among them equipment manufactured by Sunsaloon Bodies Limited and Wilfrid Overton. All types, however, are suitable to an outside sliding door, and there is no internal pocket in the body. The doors used are exceedingly free in movement. They have a spherical bearing in the top track and run at the bottom between Ferodo strips, set in the step-well and the extension thereof. It is of interest that although the door gear to be used will be mostly of a free-acting type, several bodies will be provided with a gear which entails the movement of the handle throughout the door travel. In other words, it will be necessary for the conductor to guide the door throughout the whole of its movement instead of merely beginning its action and allowing it to continue by its own velocity.

On all vehicles, access to the door gear is simply and easily provided by a large hinged flap fitted over the gear on the outside of the body. The flap is mounted upon



Final stages of erection of the bodywork



Main body verticals attached to chassis framework

quadrants and the removal of a door and mechanism is comparatively simple. In addition to this large flap, a further small hinged trap is situated toward the front of the gear, so that access to the actual operating mechanism can be obtained separately.

### Interior Finish

As is usual upon London Transport coaches built for general service, the interior is fitted with luggage racks which will accommodate small articles and also comparatively large suitcases. These are constructed in the course of building the framework, the supports being polished aluminium castings bolted to the channel hoop sticks of the roof. At the gangway edge of the casting, it terminates into a boss which receives a longitudinal hand rail. This rail is of a polished M.G. 7 non-corrosive material. So that suitcases will not damage the Rexine fitted to the side panels of the roof directly above the luggage rack, a row of rubber hose is fitted at this point. In accordance with the general practice of London Transport, all interior panels above the coving section of the side frame are covered in Rexine.

The coving panels are an actual constructional feature of the vehicle, and it can be seen from the illustrations of the bottom frame in skeleton form that, riveted to the gussets supporting the pillars from the bottom bars, they provide an effective means of strengthening the body at this point. The moquette with which the seats are covered has been designed to blend with the brown lino and Rexine, and also the various shades of green employed above the waist.

All seats are of a composite aluminium and steel construction, the aluminium used again being that known as M.G. 7. This is non-corrosive and particularly suited to its purpose. The non-corrosive qualities of this alloy are eradicated at any point where a tube is welded, and therefore it has been necessary for a non-corrosive casting material to be used where required, in place of welding, that is, at curvature and junctions of tubes and channels. The steel parts of the seat are thus not visible to the eye, and these, in common with the flooring, have been painted brown. A further point which has been followed up to facilitate cleaning is the use of a cantilever type of leg for fixing the seats. These are so arranged that the seat is supported approximately in its centre on legs, the gangway portion of the seat overhanging the legs, but being supported from it by diagonal bracing.

### Driver's Cab

Consideration has been given to the comfort of the driver in the design of the cab. Two features worthy of mention lie in a departure from the standard driver's screen and signalling window. The screen is actuated both in its top and bottom section by a winding mechanism. It is not usual for the bottom section of the screen to be adjustable. In this case, however, two handles are fitted complete with a gearbox in the centre of the bottom portion of the glass at its base, and by actuating either of these, the top or bottom half of the screen can be opened. The mechanism provided is Cox & Company's Unbreakable-Back Chain gear, housed in suitable tubes which transmit the movement of the handle to the appropriate parts of the screen.

A quick-acting lever is fitted to the door which opens or closes the signalling window in one movement. The part of the window which is operated by this lever is sufficient only for signalling. Should further ventilation be required, the upper portion of the signalling window can be moved upward into the door by means of an inverted Hallam, Sleigh & Cheston half-drop window gear. This feature is valuable also when reversing vehicles at the depots.

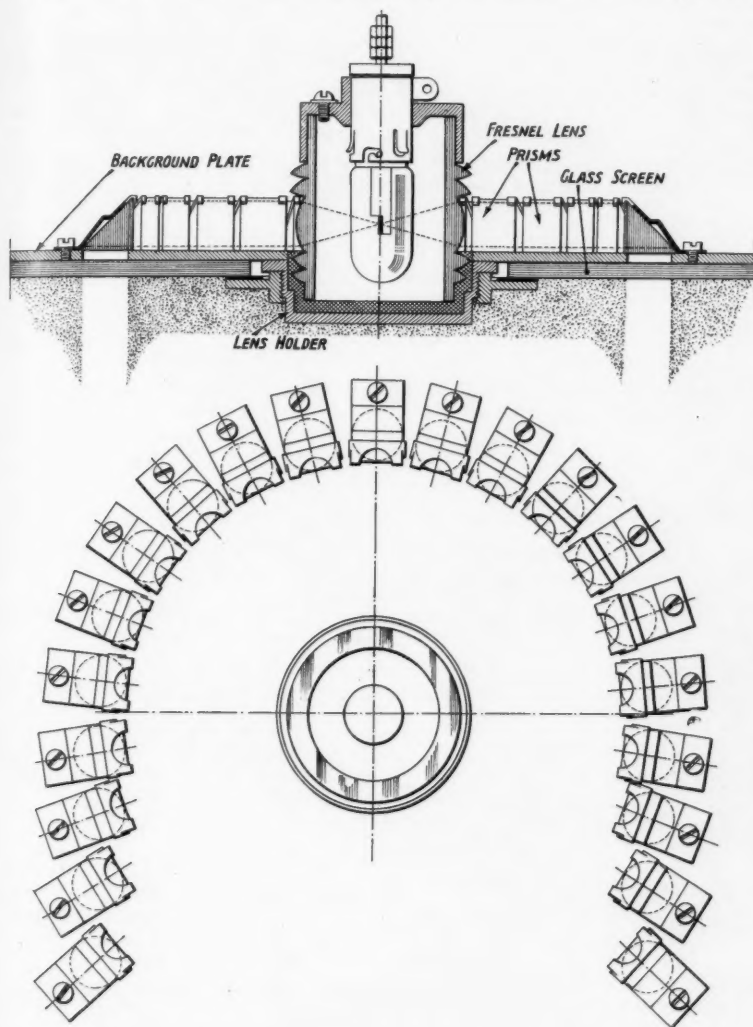


## LUMINOUS SPEED INDICATORS

### *New optical arrangement on the French railways*

THE Ch. de f. du Nord, now the Northern Division of the French National Railways, recently adopted a new form of speed indicator for use in connection with its automatic colour-light signal installations; its appearance is seen in the accompanying illustration and

at 300 yd. The prisms are secured to the plate by a special clip in a very simple manner. In certain cases it is necessary to make these indicators double-faced, and then a special lens is used round the lamp which divides the light into two planes so as to fall on the two groups



*Above: Luminous speed restriction indicator on former Nord section, French National Railways*

*The diagram on the left shows the principle of the Devilaine & Rougé luminous indicator used on French National Railways*

the diagram gives details of the principles of construction, due to Devilaine & Rougé.

The front of the indicator is a steel plate pierced with  $\frac{3}{8}$ -in. holes at 1-in. centres in the form of the symbol to be exhibited to the driver, with the usual protecting hood. Behind every hole a prism is mounted; and within a given group of prisms, according to the shape of the symbol, a 6-volt, 2-watt lamp is placed inside a Fresnel lens, resembling those used in marine signalling lamps. The light from the lens falls on the prisms and is thus deflected to pass through the holes, parallel to the screen, to form the indication intended, which usually measures about 17 in.  $\times$  8 in. and is said to be clearly visible

of prisms. By certain other small modifications, indicators showing different symbols at will may be constructed.

In the new French signalling at junctions the speed restriction to be observed on any given route is indicated in this manner unless it comes within the general 30-m.p.h. restriction imposed by the double-yellow reduced speed indication, so that a large use of luminous indicators is becoming necessary.

A modification of the Devilaine & Rougé indicator is also used to produce the vertical bar of light shown when one of the older disc type speed boards is turned edge-wise to the train.

## RAILWAY WELDING PROGRESS IN 1937

### A brief review of recent developments

By O. BONDY

**C**OMPARISON between the present position of welding in railway practice and that of only a year or two ago shows that substantial progress has been made. In some applications welding has become the standard process supplanting earlier methods, and in others it ranks equally with the older methods. Recently, the uses of welding in almost every branch of railway work have become so numerous that it is impossible to mention them all in the space here available. The only practicable course, but one which provides a useful perspective, is to refer to some outstanding examples, interesting and instructive in themselves and indicative of the lines along which practice has advanced during the last year or so.

#### Vehicles

Various methods of welding have been applied successfully and to an increasing extent to the building of goods wagons, including those of the largest sizes, passenger coaches of all descriptions and locomotives. British wagon builders have constructed wholly or partly welded vehicles for export as well as for home railways. The L.M.S.R. has had passenger coaches in service since 1934 with all-welded underframes and bogies; certain parts of the bodies and the external panelling are now welded also as standard practice.\*

In Czechoslovakia, the Skoda Works have built tenders by welding, mounted on bogies of cast vanadium steel. These tenders carry about 9 tons of coal and 6,600 gallons of water and weigh 21 tons 15 cwt. each.

In Germany, welding has steadily gained favour in the building of wagons and coaches, and the German State Railway has already several thousand welded vehicles in service. Compared with the older construction, there is up to 23 per cent. saving of weight in goods wagons and as much as 27 per cent. in passenger coaches, these figures relating to the main and bogie frames and body framework, but excluding the wheel sets which do not enter into the comparison.† New methods of construction have been introduced, among which the box and other hollow girder forms are comparatively easy to build by welding and offer the special advantage of greater torsional rigidity with minimum weight. The superiority of the welded construction is particularly evident in container wagons, hopper wagons and various special forms of crocodile wagons with extra-rigid frames.

Special consideration must be given to the possibility of fatigue fracture where welding is employed. In diesel railcars, for example, the engine and generator frames are specially liable to such failure. Careful attention to the design, particularly of details, is essential, and the welds should be machined after welding. Possible sources of danger are undercutting in the parent metal at the edges of fillet welds, and end craters of the welds; such craters should be eliminated. Danger may also arise from the welding of parts to structures already under stress. These matters have already been discussed in relation to the fatigue strength of welded joints,‡ but it may again be emphasised that special care must be exercised in the design and execution of welds in parts which are to carry dynamic stresses in service.

Electric-arc welding has been applied successfully to the construction of locomotive fireboxes in steel, instead of copper\* the technology of welding and the testing of the welds by X-rays supplementing each other very advantageously.

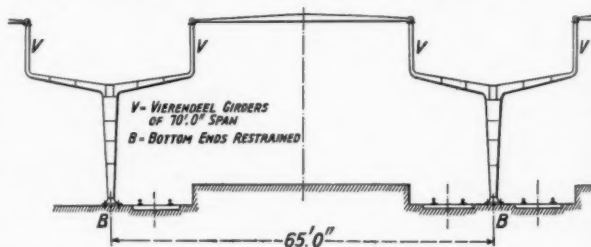
Fig. 1 shows the inside and outside of a bogie frame girder of welded construction. The length is 12 ft., the wheelbase 8 ft., and the frame is 1 ft. 3½ in. deep at the centre. The plate thickness of the web and flanges is ¾ in. Each of these beams weighs 238 lb. and the bogie carries 13 tons. The simple and effective stiffening by plates welded on edge to form ribs is an interesting feature of this construction.

Fig. 2 shows an all-welded buffer-coupling beam for the Chinese National Railways. This component is 4 ft. wide, 2 ft. 4 in. in length, and 9½ in. deep.

A feature of the welded body construction shown in Fig. 3 for diesel railcars of the Central Argentine Railway, is that the body is welded to the frames so that the structure forms a tubular girder, adding substantially to the strength and security of the whole. The framework of the body is built up by welding together pressings from thin steel plate; the window frames are light-metal castings; and the outer plates are of aluminium alloy, except at the lower part of the body where sheet steel is used. The use of welding contributes greatly to the pleasing form and smooth surface of these coaches.

#### Station Buildings and Structures

Earlier examples of the use of welding in this field are to be found in the welded roofing of Elm Park station on the Barking line of the L.M.S.R.; and in the L.N.E.R. station hotel at Hull, with welded plate girders of 54 ft. span. There are at present under construction, at York, welded platform roofs which, in length and simplicity of design and construction, are the most important work of



Welded station roof at Duisburg

the kind in England. A welded footbridge has quite recently been put into service at York station.

In the extension of the railway stations at Kalka, Delhi, Karachi, and other places in India, new platform roofs have been built with welded lattice purlins 50 ft. in length. These purlins are of triangular section, with three longitudinals connected by welded lattice bars. They have been tested to destruction with satisfactory results,† the deflections being measured during the tests.

Among recent developments in Germany, reference must be made to the welded station roofs at Düsseldorf and Duisburg; the above sketch shows the principle of their

\* Paper (No. 5058) by Dr. P. L. Henderson before the Institution of Civil Engineers

† G. Maurer, *Elektroschweißung*, September/October, 1937

‡ O. Bondy, Welding Symposium, London, 1935

\* Henschel-Heft, Kassel, August, 1937

† THE RAILWAY GAZETTE, July 16, 1937, page 120

design. The superstructure is carried on Vierendeel girders of 21.3 metres (69 ft. 10½ in.) span with their vertical openings glazed.\*

At Wittenberge station in the Hamburg Division of the German State Railway a railcar shed was built with welded two-pin frames of 15.5 metres (50 ft. 10½ in.) span. At Weidendam, Hannover, there is a goods shed with a covered ground area of 36,700 sq. metres (394,892 sq. ft.) and a total weight of 3,600 tons of St. 37 steel (minimum tensile strength 23.4 tons per sq. in.). An interesting feature of this building is the combined use of riveting and welding. The lattice girders connecting the heads of the stanchions 31.5 metres (103 ft. 4 in.) apart are riveted,

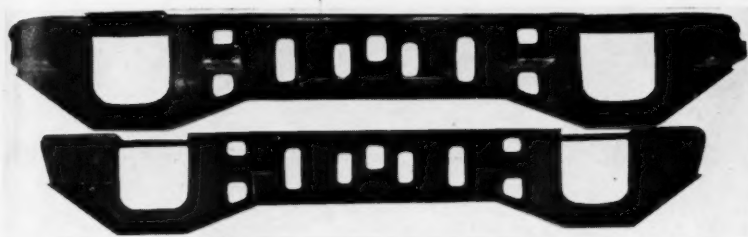


Fig. 1—All-welded bogie frame for diesel-electric railcar at Buenos Aires

the saving of weight by welding being comparatively small in lattice girders, but the plate girders of 27.8 metres (91 ft. 2½ in.) span for the roof are all-welded.

#### Bridges and Bridge Strengthening

The first welded railway underbridge in England is at present under construction near Ladbroke Grove station for the London Passenger Transport Board. It is a double-line structure of about 66 ft. span with three main plate girders of all-welded construction.

In India, bridge strengthening has been effected by welding steel strips on to the webs of plate girder bridges of 80 ft. span after the webs had buckled by amounts up to ½ in. Roller-bearing supports for bridges have been built by welding instead of in cast steel.†

The bascule bridge over the Peene at Anklam, in the Stettin Division of the German State Railway, is an all-welded single-arm bridge of 14.7 metres (48 ft. 2½ in.) span. A small welded railway bridge recently completed in Germany is shown in Fig. 4. This is a single-line structure of 32.4 metres (106 ft. 3½ in.) span, weighing 94 tonnes (92 tons 10 cwt.). The flange plates of the plate girders are of the "nose profile" type, with grooved bosses for the reception of the web which is then secured by fillet welds. The main girders were built by welding in the workshops, and then welded on site to the cross beams, longitudinal beams, and well plates to form the complete structure.

The following experience in the strengthening of a certain German railway bridge is instructive. The bridge is of riveted construction, and the riveted straps of the butt joints in the lower flange having proved too weak, reinforcement was attempted by welding on a cover plate 50 × 15 × 1,200 mm. (1¾ × ½ × 47½ in.). It was found, however, that this supposed strengthening actually

weakened the resistance to fatigue, and fatigue tests showed that the resistance to fluctuating stress of the riveted joint was reduced by 43 per cent. by the so-called "reinforcement," if the welded joints were not machined. and by 24 per cent. if the welded joints were machined. It was therefore decided to strengthen the lower flange by a broad flange girder IP20 (about 8 by 8 in. I-beam) with riveted connection at the nodal points.\*

Other structures of a bridge-like nature have recently been welded in Germany, viz., a traverser 24 metres (78 ft. 9 in.) in length for loads up to 80 tonnes (78 tons 14 cwt.) with overhead closed frame portals, and an articulated turntable of 23 metres (75 ft. 5½ in.) diameter and 350 tonnes (344½ tons).†

The welded Rügendamm bridges, opened to traffic in October, 1936, with single spans up to 54 metres (177 ft. 2 in.), represent the highest achievement yet reached in the construction of welded railway bridges.‡ The details of their design and execution, as well as the results of tests on these structures, afford valuable guidance for the future construction of welded bridges.

#### Rail Welding

Further favourable experience with welded rails has been acquired in England on a large scale. The Southern Railway is using sets of three standard 60-ft. lengths of rail Thermit-welded to form continuous lengths of 180 ft. In the Merstham Quarry tunnel 258 welds were made at the rate of up to 20 per diem.§ Similar lengths are now also being laid in the open.

An electric flash butt welding plant has recently been placed in service by the L.P.T.B. It requires 300 kVA., which is supplied by a special diesel-electric set. Five 60-ft. rails, weighing 95 lb. per yard, are welded together to form a continuous length of 300 ft. The process is carried out automatically, according to the temperature of the weld which is determined by optical pyrometers. The application of 27 tons compression to complete the weld is



Fig. 2—All-welded dragbox for steel coaches of the Chinese National Railways

also regulated automatically. The time taken for the actual weld is less than 3 min., but this is followed by heating the joint to 850° C. (1,562° F.) to anneal the metal, after which the surplus metal is ground off. The machine is thus capable of completing six welded joints

\* G. Schaper, *Bautechnik*, No. 3, 1938

† *THE RAILWAY GAZETTE*, July 16, 1937, page 120

\* G. Schaper, *Bautechnik*, No. 37, 1937

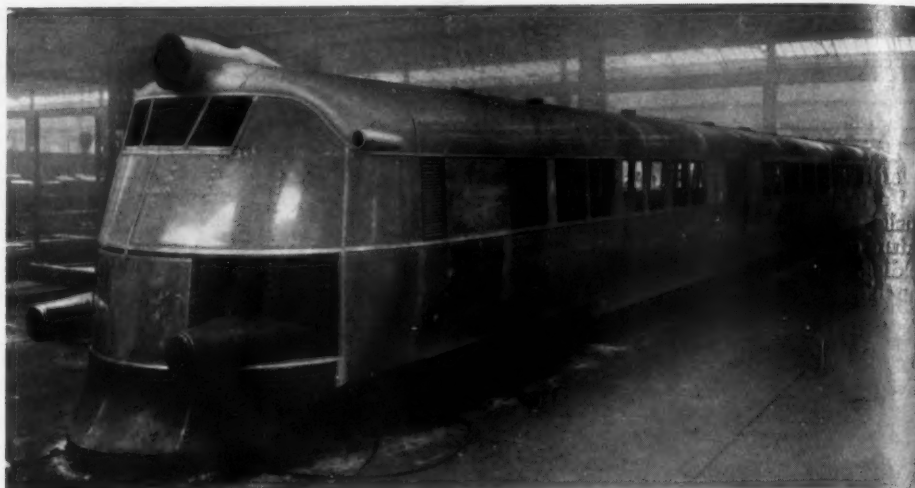
† *Elektroschweißung*, December, 1937

‡ O. Bondy, "Modern Railway Welding Practice," 1937

§ *THE RAILWAY GAZETTE*, July 16, 1937, page 115



Fig. 3—Welded coach body for diesel railcars of the Central Argentine Railway



an hour. It is proposed to lay running rails in lengths of 300 ft., and conductor rails in lengths of 240 ft., in the tunnel; and to use continuous lengths of 240 ft. and 120 ft. respectively in the open.

In Australia the practice of welding rails into lengths up to 225 ft. continues as standard on the New South Wales and the Victorian Railways. Thermit welding has been used mostly, but the Victorian Railways have recently installed a flash butt welding plant. In America on the Delaware & Hudson Railroad the whole 1937 re-railing programme was carried out with rails welded into continuous lengths, joints being provided only where necessitated by points and crossings and track-circuit ends. Flash butt welding is used at the depot, and lengths of over 1,000 ft. are welded in the track by the Thermit process.\*

Further progress has been made with oxy-acetylene welding in Germany, where specially trained workmen of the German State Railway work in pairs on the track. About 30,000 joints have already been made by this type of welding, without supplementary plates or straps. A Brinell hardness number of 285 is reached in the rail head, nearly equal to that of the rail itself (300), so that there is no danger of the formation of depressions or corrugations by hammering. Endurance tests under alternating

bending gave the following fatigue strengths: 10 kg. per sq. mm. (6.35 tons per sq. in.) in bolted fish-plate joints, 20 kg. per sq. mm. (12.7 tons per sq. in.) in autogenously-welded butt joints, and 30 kg. per sq. mm. (19.1 tons per sq. in.) in solid rail. Special importance is attached to the saving of imported materials resulting from the welding of old rails, a few pounds of added steel enabling lengths of such rail to be welded together for further service.\*

There are at present three principal methods in competition for rail-welding, Thermit, oxy-acetylene, and electric resistance welding. Electric-arc welding has gone very much into the background as regards the end-to-end welding of rails, but it plays an important part in deposition-welding for point and crossings repairs in competition with oxy-acetylene welding.

### Conclusion

In workshop operations and on the track, welding processes have further extended their fields of application. For many purposes, the experimental stage is past. Welded connections have demonstrated their technical and economic advantages, and they will be used yet more extensively as further improvements are effected.

\* THE RAILWAY GAZETTE, October 15, 1937, page 634

\* H. Frankenbusch, *Autogene Metallbearbeitung*, January 15, 1938



Fig. 4—Welded railway bridge, single-track, 32.4 metres (106 ft. 3½ in.) span

## RAILWAY NEWS SECTION

### PERSONAL

Mr. C. W. Reeve, Chairman and Managing Director of the Associated Equipment Co. Ltd., has been appointed a Director of D. Napier & Son Ltd.

Professor Dr. J. Goudriaan, who succeeds the late Mr. E. C. W. Van Dijk as Joint General Manager of the Netherlands Railways, took up his duties on June 1. Professor Goudriaan was born



**Professor Dr. J. Goudriaan**

Appointed Joint General Manager,  
Netherlands Railways

in 1893, and educated at the Engineering University at Delft, Holland. After graduating as a Mechanical Engineer in 1915, he held the posts of Inspector under the Ministry of Labour, Director of the Netherlands Standards Office, Chief Engineer of the Feyenoord ship-building and allied industrial works at Rotterdam, and Assistant General Manager of the Philips electrical works at Eindhoven, which post he is now exchanging for that of Joint General Manager of the railways. In 1926 he was appointed Professor in Management Economy at the Rotterdam Commercial University, and in 1936, concurrently, to the same chair at his old university in Delft. It is Professor Goudriaan's intention to continue his university work along with his new occupation.

Dr. Hermann Rühlow has retired from the position of Chief of the Power Signalling Department of the Vereinigte Eisenbahn-Signalwerke, Siemensstadt, Berlin, having been associated with electrical signalling ever since entering the service of

Siemens & Halske in 1896. He has been succeeded by Dr. W. Schmitz, some of whose contributions to the technical history of signalling have been reviewed in our columns.

### G.W.R. APPOINTMENTS

The following appointments are announced by the Great Western Railway (to date from May 30 except where otherwise shown):—

Mr. J. A. Williams, Chief Clerk, Chief Goods Manager's Office, Paddington, to be District Goods Manager, Exeter (from July 1).

Mr. A. Bond, Chief Goods Manager's Office, Paddington, to be Chief Clerk, Chief Goods Manager's Office, Paddington (from July 1).

Mr. L. E. Ford, Docks Manager, Port Talbot, to be Docks Manager, Cardiff & Penarth Docks.

Mr. J. T. Edmunds, Assistant Docks Manager, Swansea, to be Docks Manager, Port Talbot.

Mr. T. G. Davis, Solicitor's Office, Paddington, to be Chief Conveyancing Assistant, Solicitor's Office, Paddington.

### PRESENTATION TO MR. C. R. BYROM

Mr. C. R. Byrom, C.V.O., O.B.E., who retired on May 31 from the post of Chief Operating Manager, L.M.S.R., received a presentation from the staff of his department in the course of a short ceremony at Euston on May 27.

Mr. G. Gay, Chief of the Freight Rolling Stock Section, presided and called upon Mr. A. Yeaman, Motive Power Assistant, to make the presentation of two silver entrée dishes to Mr. Byrom.

Mr. Yeaman said that if ever a man had led a vigorous and active life, had been enthusiastic in his work, and had given a railway company service of a very high order, that man was Mr. Byrom. During his tenure of office Mr. Byrom's name had become synonymous with operating efficiency and progress. A very large measure of that progress had been initiated by Mr. Byrom himself, and the successful realisation of it was due to his untiring efforts. He was enthusiastic himself, and encouraging to those who served under him. Notable events in Mr. Byrom's career had been the excellence of his arrangements to handle the intensive passenger traffic of the Jubilee and Coronation periods, and his inauguration in 1934 of the "On Time" movement, the latter showing him to be not only an expert in railway operation, but a master of psychology. Mr. Yeaman then made the presentation, expressing the sincere wishes of the staff to Mr. and Mrs. Byrom for a long life and happy retirement.

Mr. Byrom, in acknowledging the

presentation, said that no man could have been blessed with a better staff than he had. He had received unfailing service and loyalty even in the sometimes trying circumstances involved by the changes consequent upon railway reorganisation. Mrs. Byrom had asked him to give a special message to his department, saying that they would value this presentation all their lives. It was impossible to live in a large family as long as he had done without finding it a wrench to



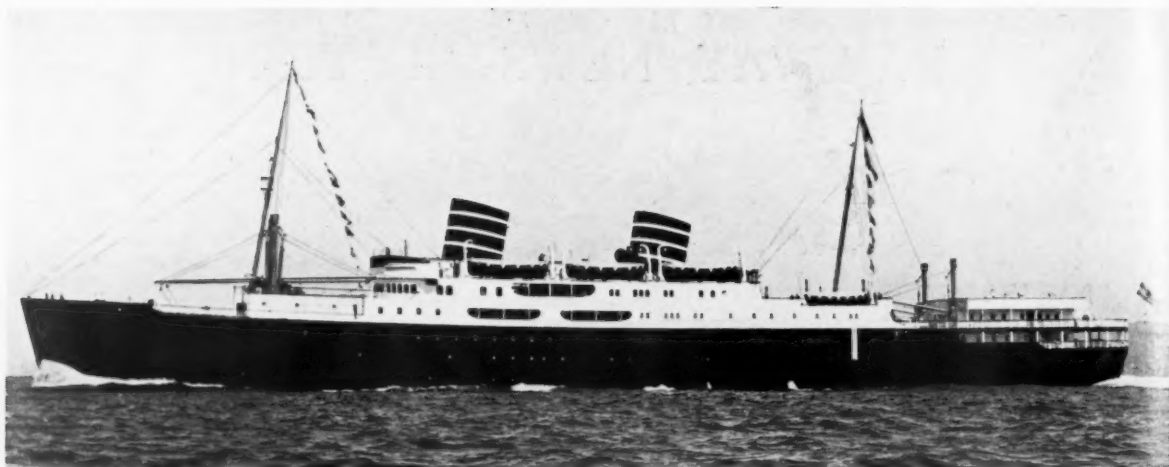
**Mr. F. J. Salberg, M.B.E., V.D.**

Chief Engineer, appointed Acting Agent,  
Assam-Bengal Railway

say good-bye, but the gifts he had received would remind him of a loyalty and affection which he thought he was entitled to say no other man had ever had.

Mr. Byrom then shook hands with every member of his staff who had attended the presentation as they left the room.

Mr. F. J. Salberg, M.B.E., V.D., A.C.G.I., M.Inst.C.E., Chief Engineer of the Assam-Bengal Railway, who—as announced in our issue of May 20—has been appointed Acting Agent of that system, was educated at St. Dunstan's College, Catford, and at the City & Guilds Institute, Central Technical College, South Kensington. After obtaining his diploma of A.C.G.I., he served for two years in the works of John Penn & Co. Ltd., Greenwich, and then joined the Assam-Bengal Railway in March, 1905, as an Assistant Engineer. He became a District Engineer in 1924, and Chief Engineer in January, 1935. During his service he has been engaged on the constructions of the



*The new B. & N. Line motorship "Vega" which is being placed on the Newcastle-Bergen service tomorrow (see page 1087)*



*Photo]*

*Indian State Railways dinner on Monday last (see page 1083)*

*[Swaine*



*Left: Slate train on a 2-ft. gauge line at the Dinorwic quarries at Llanberis in North Wales. These slate quarries are among the largest of their kind in the world. The locomotive was built by the Hunslet Engine Co. Ltd., Leeds. The double-flanged wheels on the trucks will be noted. These quarries and their extensive railway systems formed the subject of an article in our issue of April 19, 1935*



Kalaura—Fenchuganj, the Bhairab—Tangi, and the Simaluguri—Khowang Railways; on the regirding of the Dehing and Dilli bridges; and on general open line maintenance work. In January, 1915, Mr. Salberg received a Commission in the Indian Army Reserve of Officers, and saw service with the 1st K.G.O. Sappers and Miners on the Malakhand North-West Frontier, and with the Aden Expeditionary Force. In 1916 he was transferred to Military Railways in Mesopotamia, and was at the attempted relief of Kut, and was with the Sheikh Saad-Shatt-al-Hai Railway at the time of General Maude's Shumran crossing. Later he was transferred to the Kut—Hinaidi line, where 105 miles of metre gauge railway were laid and handed over for use at 30 m.p.h. complete with depots and crossing stations within 66 days of the commencement of linking. From this work Mr. Salberg went to the construction of the Diala bridge (four spans of 100 ft. and two spans of 75 ft.) on well foundations with seven miles of approaches, which was made over for use 13 months after calling for the design of the project. For his services in Mesopotamia he was mentioned in despatches and awarded the M.B.E. Mr. Salberg was for thirty years an officer of the A.B.R. Auxiliary Force, which he commanded from 1932-1936, retiring with the rank of Hon. Lt.-Colonel.

The late Mr. William Henry Fox, whose death on May 14 was recorded in our issue of May 20, was born in October, 1858, and entered the service of the former L.B. & S.C.R. in the Stores Department at Brighton in March, 1872. The Stores Department was removed to New Cross in November, 1876, and Mr. Fox obtained experience in all sections, being appointed Chief Clerk in April, 1899. He was appointed Storekeeper in December, 1909. His designation was changed to Stores Superintendent in November, 1911, and he retired in February, 1923, upon the amalgamation of the railways. In spite of a severe operation soon after his retirement Mr. Fox made a full recovery and was a regular playing member of the Croham Hurst Golf Club. He was buried at Queen's Road Cemetery, West Croydon, on May 17, when a number of friends and old colleagues attended. Mr. Fox lost his wife shortly after the war, but two sons and three daughters survive him.

#### P.L.A. APPOINTMENTS

At a meeting of the Port of London Authority on May 26, Mr. John Douglas Ritchie, M.C., was appointed General Manager as from September 30 next, when the present General Manager, Sir David J. Owen, will retire. Other consequential appointments, to take effect immediately, are:—

Mr. R. Leitch, to be Chief Assistant to the General Manager.

Mr. E. H. Lennard, to be Assistant Dock & Traffic Manager.

Mr. E. L. Stanley, to be Stores Manager.

Mr. J. D. Ritchie entered the service of the Port Authority as Solicitor in 1923; in 1927 was appointed to the joint office of Solicitor and Secretary, and has been Deputy General Manager since January 1 this year (as announced in our issue of December 3, 1937).

#### INDIAN RAILWAY STAFF CHANGES

Mr. R. Bould, Deputy Transportation Superintendent, G.I.P.R., has been granted two years' leave preparatory to retirement as from April 1.

Major R. H. Wigfall, Chief Auditor, S.I.R., has been granted leave preparatory to retirement from March 31, and Mr. C. R. Martingell was appointed to assume charge of the department from that date.

Rai Sahib M. Ramchandra Iyer has been appointed to act as Deputy Chief Auditor, South Indian Railway.

Mr. J. H. F. Raper, Chief Commercial Manager, G.I.P.R., has been appointed to officiate as Agent of that system, in place of Mr. L. Wilson, who is officiating Chief Commissioner of Railways—as recorded in our issue of May 13—with effect from April 8.

Mr. H. M. Baikie, officiating Deputy Chief Engineer, E.B.R., has been granted 15 months' leave preparatory to retirement as from July 15.

From *The London Gazette* of May 27: Territorial Army, Engineer & Railway Staff Corps: Robin McAlpine, to be Major (May 28).

The late Mr. James McLaren, formerly Secretary of the London & North Eastern Railway (see obituary notice in our issue of February 4), left personal estate in Great Britain valued at £15,584.

Mr. Ashton Davies, O.B.E., Chief Commercial Manager, London Midland & Scottish Railway, and Mr. Percy Syder, London City Manager, London & North Eastern Railway, were unanimously re-elected members of the Council of the London Chamber of Commerce for a period of three years at the annual meeting held on May 25.

Mr. Charles Ree, who is at present in the service of the L.M.S.R., has been appointed an assistant to the General Manager of the Mersey Docks and Harbour Board, in consequence of staff changes necessitated by the forthcoming retirement of Col. T. H. Hawkins from the post of Senior Assistant General Manager. Mr. Ree is a son of the late Sir Frank Ree, General Manager of the former London & North-Western Railway. He joined the L.M.S.R. in 1924, and in 1929 was attached to the outdoor staff

of the District Goods Manager, Liverpool. He was later appointed L.M.S.R. Goods Agent at Soho, Birmingham, and he is now in the United States studying railway conditions.

We regret to record the death on May 12 of Colonel James Dickson, who was killed when the motorcar in which he was travelling collided with an electric train at a level crossing at Springs, near Johannesburg. Colonel Dickson was from 1931 to 1936 Mechanical Engineer, Durban, South African Railways & Harbours.

Mr. J. H. Nuelle was on May 10 elected President of the Delaware & Hudson Railroad and its subsidiaries, to fill the vacancy caused by the retirement of Mr. L. F. Loree (see our issue of May 13). Mr. Nuelle has spent most of his career with the New York, Ontario & Western, of which system he was President from 1930-36. He succeeded Mr. S. D. Warriner as President of the Lehigh & New England Railroad last year.

We regret to record the recent death in Edinburgh in his 71st year of Mr. J. P. Pearson, the writer on railway topography and travel. Mr. Pearson's railway interest was formed during his boyhood in Carlisle, continuing when he went to London and entered the Civil Service; and to the study of train speeds and locomotive performance he added a keen curiosity to know what the railway systems of other countries looked like. The record of the widespread journeying by which he satisfied this curiosity is seen in his four-volume work "Railways and Scenery," published by Cassell & Co. Ltd. in 1932. In this unusual world-wide travel book the countries Mr. Pearson visited are described entirely as seen from the train, and the characteristics of their people are reflected in the appointments of trains, stations, and refreshment rooms. All this is interspersed with an enthusiast's observation of locomotives, railway equipment in general, and physical characteristics of the lines traversed. Mr. Pearson's first journeys abroad were made between 1885 and 1892, and were mainly trips to Paris and back. By 1895, however, he had published a book on "British Railways" (under the name of J. Pearson Pattinson), and had begun contributing railway articles to U.S.A. papers, after which he embarked upon the more ambitious journeys forming the backbone of his book. This covers the period from 1888 to 1913, recording 76 journeys taking the author twice round the world. Mr. Pearson was an occasional contributor to our associated contemporary, *The Railway Magazine*, and the author of other books on the South Eastern, London Chatham & Dover, and London Brighton & South Coast Railways.

## Ancillary Businesses of the British Railways in 1937

### VI—Air Transport

Air transport has not yet proved a commercial proposition to the three British railways which have so far taken an active interest in the business, but the facilities provided by Railway Air Services Limited are playing a useful part in the development of the country's internal air lines, and there was a substantial increase in the carryings last year. The total gross receipts of the three companies concerned amounted to £32,500, an increase of £7,835 compared with 1936. Expenditure rose by £18,361, however, with the result that the loss of £51,468 was £10,526 more than in the previous year. The figures for each company are shown in the following table:—

Company	Gross receipts		Expenditure		Loss	
	1937	1936	1937	1936	1937	1936
G.W.R. ...	£ 2,169	£ 2,265	£ 11,999	£ 10,977	£ 9,830	£ 8,712
L.M.S.R. ...	28,121	20,856	64,656	48,738	36,535	27,882
S.R. ...	2,210	1,544	7,313	5,892	5,103	4,348
Total ...	32,500	24,665	83,968	65,607	51,468	40,942

G.W.R. receipts showed a slight decrease of £96, but expenditure rose by £1,022, and the net loss of £9,830 was £1,118 more than in 1936. The L.M.S.R., which has by far the largest interest in air transport, increased its gross receipts by no less than £7,265, or 35 per cent. Expenditure rose by £15,918, or 33 per cent., with the result that the net loss of £36,535 was £8,653, or 31 per cent., in excess of the 1936 figure. The Southern Railway Company's receipts rose by £666, but as expenditure advanced by £1,421, the net loss of £5,103 showed an increase of £755.

#### R.A.S. and Maybury Report

It is now five years since the British railways first availed themselves of their powers to operate air services, and it may be claimed, therefore, that a very fair test has been made of the possibilities of internal air services in Great Britain. The total loss incurred by the railways during this period has amounted to approximately £160,000, but the experience gained has been invaluable, and the report of the Maybury Committee issued at the end of 1936 was in the nature of an endorsement of the policy pursued by Railway Air Services since its formation.

In March, 1937, the Government announced its acceptance of the recommendations of the Maybury Committee, among which was a proposal for a provisional regulation of selected routes with a view to ensuring that suitable conditions are secured for the experimental operation of air services in such a way that they will be given the maximum opportunity of becoming self-supporting. With this end in view, the committee suggested a scheme whereby a number of services

would radiate from a central junction aerodrome to selected areas, and suggested that such a junction might well be situated in the Manchester—Liverpool area, from which services could be operated to Belfast, Glasgow—Edinburgh, Newcastle, London, Portsmouth—Southampton, and Bristol. As pointed out by Sir Josiah Stamp at the annual meeting of the L.M.S.R. in March last, this proposed network corresponds closely with that operated by Railway Air Services during the summer months.

The committee also emphasised that air services in the British Isles could be operated on a financial self-supporting basis only if cut throat competition

were eliminated and some measure of restriction applied to avoid indiscriminate multiplication of services. It stressed the advantages of close association between railway companies and air travel, and instanced the facilities provided in connection with Railway Air Services and allied companies, including ample booking facilities, inter-availability of rail and air tickets, simplification of baggage arrangements, and the provision of terminal facilities. The committee also rejected the suggestion that competitive forms of transport had entered the field of commercial aviation in order to delay its development.

#### Developments in 1937

One of the most important routes operated by Railway Air Services is the mail service between London, Belfast, and Glasgow, which has continued without interruption since August, 1934. The regularity of this service has been very satisfactory, and, notwithstanding difficult operating conditions during the winter months, practically 100 per cent. regularity has been achieved, while there was an entire freedom from accident in 1937. The Post Office mail contract held for the past two years was renewed for 1938. There has been a steady growth of traffic on this route, and during the summer of last year an additional afternoon service was operated in each direction between London and Belfast. In addition to providing "there and back" facilities to all points on the route, the new service met the increasing demand for the provision of connections at Croydon with many of the air services linking London with the principal Continental centres, thus making it possible for business men to

leave Rome, Cannes, Copenhagen, Basle, or Berlin in the morning and have tea in Liverpool or Belfast. The afternoon service called in both directions at the Isle of Man.

With the introduction of the summer service on May 10, 1937, Railway Air Services was operating 76 regular services over the routes established in 1936. Apart from the additional services on the London—Belfast route, there was an intensification of services to Blackpool; Manx Airway Services (worked on behalf of the L.M.S.R. and the Isle of Man Steam Packet Company) provided additional services to many points from the Isle of Man; and on the South Coast more services were available between Brighton and Ryde (Isle of Wight), and connections were made at Exeter, Southampton, and Shoreham, with the services operated from these centres to the Channel Islands by Jersey Airways Limited.

#### Isle of Man Air Services

In September last it was announced that agreement had been reached between the L.M.S.R., the Isle of Man Steam Packet Company, and Olley Air Service Limited, for a fusion of their interests in the internal air line operations radiating from the Isle of Man. As a result of this agreement, the services formerly operated by Manx Airway Services (R.A.S.) and Blackpool & West Coast Air Services Limited (a subsidiary of Olley Air Service Limited) are now worked by a new company known as Isle of Man Air Services Limited. Under this scheme, which was a definite move in the direction advocated by the Maybury Committee, the financial prospects of the Isle of Man Services have been materially improved. Commenting upon this development, Sir Josiah Stamp stated recently that it was hoped to effect further co-ordination with other air operators as and when opportunity offered, and that efforts would continue to be directed to the provision of air transport within the area served by the L.M.S.R. where the public demand is likely to be sufficiently regular and expansive to justify it to the point of ultimate profitability. A further development has been the association this year of the L.M.S.R. with Scottish Airways Limited (see our issue of April 29), the effect of which upon the linking up of hitherto isolated air routes in Great Britain is referred to editorially on page 1006 last week.

On the other hand, Mr. Robert Holland-Martin has indicated that the Southern Railway Company's present policy is to curtail its air operations as it is felt that sufficient experience has been obtained for the time being.

It should be borne in mind, however, that the L.M.S.R. has far more scope for air operations than has the Southern Railway. As pointed out by the Maybury Committee, "an all-the-year-round demand for fast transport is most likely to exist between important

industrial and commercial areas, and air travel will offer a more substantial saving of time between areas which are far apart." Both these requirements are admirably fulfilled in the case of the L.M.S.R., which serves a territory stretching from London to Scotland and Northern Ireland and embracing the important and densely populated industrial areas of the Midlands and Lancashire.

### Inter-railway Ambulance Competition

The final contest for the inter-railway ambulance challenge trophy of the St. John Ambulance Association took place at the Wharcliffe Rooms, London, on May 26. A large number of railway officials and employees of all grades watched the work of the teams. From the spectators' point of view an outstanding feature of the contest was the staging of the team test, which included the cab of a locomotive and a railway coach, and appropriate "noises off." The adjudicators were Captain A. C. White Knox, M.C., M.B., for the team test; and Dr. M. M. Scott for the individual tests. Colonel J. T. Woolrych Perowne, Hospitalier of the Order of St. John, presided at the presentation of awards, and was supported by Major-General Sir Percival Wilkinson, Secretary-General of the Order, and officers of the railway companies. Sir Percival Wilkinson announced the result of the contest, in which the Crewe (L.M.S.R.) team was awarded the challenge shield, and the runner-up (Corbett Fletcher Cup) was Horsham (Southern Railway). The remaining teams in a close competition were Exmouth (S.R.), Wolverton (L.M.S.R.), King's Cross (L.N.E.R.), Bishopsgate (L.N.E.R.), Metropolitan, Piling (G.W.R.), and Westbury (G.W.R.). All competing teams were awarded prizes by the Order of St. John.

The presentations were made by Sir Josiah Stamp, G.C.B., G.B.E., Chairman of the L.M.S.R., who congratulated all the participants and was happy to know that an L.M.S.R. team had this year been successful in securing the much coveted trophy. He emphasised the fact that a first aid training, apart from its immediate object, was invaluable in the formation of character and the cultivation of perseverance and achievement in life. Sir Josiah had a special word of appreciation for the stage effects which had infused such a spirit of realism, and paid tribute to Mr. John Maxwell, Chairman, Associated British Pictures Corporation Limited, who had kindly provided the staging. Dr. White Knox addressed the competitors on behalf of himself and his colleague and briefly commented on the object of the tests imposed, and the gratifying standard of work exhibited by the teams.

### Indian State Railways Dinner

The annual Indian State Railways Dinner was held on Monday last, May 30, at the East India United Service Club, with Sir Guthrie Russell, K.C.I.E., C.S.I., in the chair. Among others present were:—

Sir Maurice Brayshaw, Sir James Williamson, Sir Hugh Hannay, Sir Ernest Bell, Sir Gordon Hearn, and Messrs. P. H. Maffin, F. A. Pope, A. E. Blair, J. Coates, G. E. Lillie, W. Tomes, A. Richardson, C. J. H. Bolton, W. H. Denby, A. R. Gundry, A. H. Chilton, A. E. Williams, W. J. Air, C. Williams, A. P. Goldney, D. S. Burn, R. D. T. Alexander, A. Forbes Smith, F. S. Bond, H. R. Rishworth, W. E. Russell, W. Hood, W. Griffith, R. Falk, H. N. Brock, W. H. J. Pyne, A. J. Boyd, L. Flatt, H. H. Saunders, F. S. Whalley, V. H. Boalch, S. M. Avril, L. F. Jackson, A. G. Hall, H. L. Carter, H. Merson Davies, R. G. Huggif, L. H. Turnbull, R. Dormer, G. F. D. Windle, L. V. Pont, R. de V. Irvine, H. D. Creedy, H. A. Joscelyne, N. C. McLeod, C. V. Bliss, T. E. S. Bell, A. Watson, N. D. Calder (Secretary), W. Hornett, D. Cardew, J. M. Hartley, R. L. Bliss, and R. H. N. Baxter.

The Chairman read out a telegram of thanks from Their Majesties in reply to a message of loyal greetings sent by those present at the dinner to the King and Queen, and, later on, proposed the loyal toast.

The toast list was commendably brief, the only speech of the evening being that by Sir Guthrie Russell in proposing "The Indian State Rail-

ways." This was almost entirely in the lighter vein, and consisted mainly of reminiscences that included his experiences on first landing in India and during his first official visit to the Railway Board—of which he is now Chief Commissioner—in Simla. The Chairman also voiced the thanks of all present to Mr. Calder, the Honorary Secretary of the dinner, for all his work in collecting people for it, a thankless task, and also to the members of the E.I.U.S. Club for the privilege of dining there.

The Dinner and Club Secretaries and the club staff are to be congratulated on the excellent dinner and for all arrangements that combined to make this one of the most enjoyable functions of the kind we ever remember. The atmosphere of informality inseparable from the club was greatly appreciated by all present, and we hope this dinner will continue to be held annually in these congenial surroundings. The one regret expressed by many was that so few present were still in harness and home on leave. Perhaps the various railway administrations could do a little more in future to encourage larger attendances. A group photograph taken at the dinner forms the subject of an illustration on page 1080.

### L.M.S.R. Hunts Bank Athletic Festival

The L.M.S.R. Hunts Bank Annual Athletic Festival was held on the Blackpool Football Club's ground at Bloomfield Road on Saturday afternoon last, May 28. This was the twenty-seventh meeting and for the past thirteen years the event has taken place at Blackpool. Nearly ten thousand members of the staff, relatives and friends arrived in the town in twelve special trains, chiefly from the Manchester district.

Among the officers of the L.M.S.R. who attended were:—

Mr. J. H. Robinson, Divisional Superintendent of Operation; Mr. F. H. Cowell, District Passenger Manager and Chairman of the Festival Committee; Messrs. W. O. Hickson, Divisional Solicitor; S. W. Spendlove, Divisional Signal and Telegraph Engineer; Vernon Gee, Assistant Accountant (Scotland); K. C. Marrian, District Engineer; and J. H. Openshaw, District Estate Agent.

A splendid afternoon's sport was provided by the 267 competitors. The programme comprised 31 events including relay, flat, walking, obstacle and sack races and many ingenious and amusing novelty items. The arrangements were perfect—no hitch or delay of any kind occurred and every event finished "On Time." The principal trophies were won as follow:—

"Carr" Challenge Cup—220 yd. flat race handicap: District Goods Manager's Department (D. P. Crowther).

"Sir George Pilkington" Cup—men's relay race: Department of the Divisional Superintendent of Operation (No. 1 team).

"Sir George Pilkington" Cup—ladies' relay race: Chief Accountant's (Horwich) Department (No. 1 team).

"Sir Josiah Stamp" Cup—inter-departmental: Department of the Divisional Superintendent of Operation.

The prizes and trophies were distributed at the close by Mrs. Robinson, wife of the Divisional Superintendent of Operation, who was introduced to the assembly by Mr. Cowell, and presented with a bouquet by little Miss Edith Mary Jones. A delightful incident occurred when Mrs. Robinson presented to her husband, as head of the winning department, the "Sir Josiah Stamp" cup. Mr. W. O. Hickson, a Vice-President of the festival, proposed a vote of thanks to Mrs. Robinson, to which Mr. Robinson responded in a genial speech.

LONDON TRANSPORT POSTERS.—London Transport shows considerable breadth of choice in its selection of posters, ranging from what some (the artistically unenlightened) may consider impressionistic and incomprehensible, to the universally understood photographic reproduction. Two examples of the latter type are now before us. They are, respectively, aerial views of Kew Gardens, and of Hampton Court, and are good examples of how this type of illustration can be used for publicity purposes. Another poster we have received is designed to reinforce the now familiar slogan "Out and About by London Transport." It consists of a brightly coloured floral design against a black background. Two other photographic posters are "It's a Beauty," and "It's a Pleasure," the former composed of floral pictures, and the latter of views of various places of amusement.



## French 1938-39 Train Services

Some of the most interesting train service changes in France, brought about with the introduction of the 1938-39 train services on May 15, concern the relations between propulsion by steam and by internal combustion. Some services hitherto worked by steam trains have been changed over to railcars, even in the case of important long-distance trains; in other cases railcar accommodation has proved insufficient, and a change-over to steam has proved necessary. Invariably there is an acceleration in the former case, and a deceleration in the latter. In the Eastern Region the 5.40 p.m. *rapide* from Paris to Strasbourg has become a railcar service, starting at 5.35 p.m., non-stop over the 219.0 miles to Nancy in 3 hr. 2 min., and reaching Strasbourg at 10 p.m., 61 min. earlier. In the reverse direction the 7.28 a.m. *rapide* is now a railcar leaving Strasbourg at 8.5 a.m., and Nancy at 9.30 instead of 9.9 a.m., Paris being reached at 12.30 instead of 12.40 p.m., a gain of 47 min. From Nancy to Paris the railcar's 3 hr. gives a scheduled average of 73.0 m.p.h. Bugatti triple-car trains are used. The 9.20 a.m. of the Northern Region from Brussels to Paris, and the 8.15 p.m. back, both 3-hr. trains, revert to steam operation, the former being now allowed 3 hr. 18 min. (a very fast time for steam with a journey of 193.1 miles and three stops), and the latter 3 hr. 25 min. The 8.40 a.m. 3½-hr. railcar service from Liège to Paris (226.7 miles) and the corresponding return train from Paris at 8.10 p.m., newly introduced last year, are both retained, now 5 min. earlier, and extended from Liège to Maastricht in Holland.

An additional service of the Northern Region, to be worked by a railcar unit, is from Tourcoing, Lille, Douai, and Arras to Paris, leaving Lille at 6.45 and reaching Paris at 9.10 a.m.; in the reverse direction departure from Paris is at 9.12 p.m. and Lille is reached at 11.42 p.m.; both times are faster than any previously operative between Paris and Lille (156.0 miles now covered in 145 min.), as also between Paris and Arras, the up journey of 119.5 miles from Arras being booked in 103 min. at 69.6 m.p.h. Conversely, of the four 2-hr. services of the Western Region (hitherto the State line) between Paris and Havre (141.5 miles) two in each direction have been taken off, in consequence of insufficient patronage, and one unit now works the remaining two services each way, covering 566 miles daily at an average speed of 72.0 m.p.h. (the actual journey time is 118 min.). But the patronage of many of the local railcar services between Rouen and Havre has become too great to be handled by railcars, and four in each direction change over to steam trains, being slowed down 13 to 17 min. in consequence. A valuable new cross-country railcar service, three times a

day each way, is introduced between Angers and Rennes.

Insufficient accommodation is the reason for a considerable change-over in the South-Eastern Region (late P.L.M.) also. The 8 a.m. railcar service from Paris to Lyons (317.3 miles) in 4 hr. 39 min., and back at 6.50 p.m. from Lyons in 4 hr. 50 min., has been worked by a double Bugatti unit, which is now transferred to the 6.45 p.m. 5 hr. service from Paris and the 5-hr. 7.15 a.m. from Lyons, hitherto worked by a double Renault car. The place of the former is taken by the *trains aérodynamiques*, or streamlined four-coach sets (worked by modified Atlantics) which have been working between Paris and Marseilles, and have proved inadequate in accommodation to meet the popular demand; this train will now leave Paris at 7.45 a.m., reaching Lyons at 12.50 p.m. (26 min. slower), and return at 6.50 p.m., with an arrival in Paris at midnight (20 min. slower). The place of the *train aérodynamique*, in its turn, is being taken by a set of non-streamlined coaches with 312 seats (as compared with 192) and restaurant car, worked by modified Pacifics, which, it is said, are ultimately to be streamlined, to a schedule only 5 min. slower than before. Leaving Paris at 12 noon, the *rapide* covers the 317.3 miles to Lyons in 5 hr. 20 min., and the 535.4 miles to Marseilles, with five stops, in 9 hr. 5 min.; the return journey, begun at 9.55 a.m., requires 9 hr. 10 min. from Marseilles and 5 hr. 21 min. from Lyons. An interesting development of the early morning Paris—Lyons service is that a fast Bugatti railcar runs in connection between Macon (an additional stop) and Geneva, giving a 6 hr. 54 min. service from Paris to Geneva, and a 7¼ hr. service back, and so enabling a business man, if he so desires, to have a couple of hours in Geneva and travel from and to Paris in the same day. This is considerably the fastest Paris—Geneva time so far.

The remaining changes of importance are in most cases amplification of existing services for the summer season, certain trains which last summer had frequently to run in duplicate and even triplicate being now divided daily. In the South-West Region (late Paris—Orleans—Midi) this has led to the introduction of further lengthy non-stop journeys. A new 8.15 a.m. runs from Paris to Toulouse, nominally non-stop from Quai d'Orsay to Limoges—250.6 miles, covered in 281 min.—but service stops are made intermediately at Vierzon and Chateauroux. This gives an acceleration of exactly 2 hr. from Paris to Toulouse over the previous 7.30 a.m. train. In the reverse direction there is a new 8.25 a.m. from Toulouse, non-stop (for passengers) from Limoges to Paris (Austerlitz) in 278 min., and arriving 59 min. earlier than the 8.35 a.m.

train, which still continues to run. The Barcelona Express, which was non-stop from Austerlitz to Limoges last year, is now allowed an extra 5 min. for the two service stops, and takes 251 min. The morning and midday *rapides* to Bordeaux, both enormously heavy trains in the height of the season, are also divided, new trains at 10 a.m. and 12 noon from Quai d'Orsay both making non-stop runs over the 142.3 miles from Austerlitz to St. Pierre-des-Corps, the former in 152 and the latter in 149 min.; the accelerations so afforded to Bordeaux are 29 and 24 min. respectively. Coming up there is a new 10.15 a.m. from Bordeaux, non-stop from St. Pierre-des-Corps to Austerlitz, but only moderately timed. There are various slight decelerations of the faster trains, though the Sud Express and the evening Paris—Bordeaux *rapides* remain unaltered.

In the South-East region (late P.L.M.) a new fast day service is provided between Paris and St. Gervais-le Fayet, enabling passengers to reach the Chamonix valley in comfort with day travel only; this leaves Paris at 8.30 a.m., reaching Aix-les-Bains at 4 p.m., Annecy at 4.55 p.m., and St. Gervais at 7.9 p.m., with a connection to Chamonix, reached about an hour later. The return service is at 12.15 p.m. from St. Gervais, reaching Paris at 11.10 p.m. The 8.6 a.m. from Paris to the Riviera, a very popular train, is started at 8.15 a.m., but reaches Nice 5 min. earlier; it is relieved of the Grenoble section, which leaves at 8 a.m., and reaches Grenoble in 8¼ hr., slightly slower than before. But coming up the Grenoble train, at 1.55 p.m. from that town, is now due in Paris at 10.30 p.m., a gain of 65 min. A railcar connection for Briançon (due 10.54 p.m.) now makes possible a day journey from Paris. A new night service is put on for the summer season between Paris and the Riviera, leaving Paris at 12.25 a.m., and reaching Nice at 4.25 p.m. on the following afternoon; the return is from Nice at 6.15 p.m., reaching Paris at 10.50 a.m. In the Northern Region there is a new semi-fast service from Jeumont to Paris at 6.4 a.m., calling at all principal stations and reaching Paris at 9.5 a.m.; this meets a long-felt want, also the 11.35 a.m. return train.

An important train service development promised for October next is the institution of a fast service by the Nord three-car diesel sets between Boulogne and Basle, which will once again, as in pre-war days, permit the journey between London and Switzerland to be made without night travel. Leaving London by the 9 a.m. service, and by covering the 459 miles from Boulogne to Basle in 7 hr. 28 min., the passenger will reach Basle at 8.18 p.m., and be able to reach most parts of Switzerland the same day. Similarly in the reverse direction, the railcar leaving Basle will connect at Boulogne with the afternoon service from Paris, due in London at 11 p.m.

## The Collision at Charing Cross, District Line

### Inquest opened at Westminster

The Coroner for Westminster, Mr. Ingleby Oddie, sitting with a jury on May 27, opened the inquest on the six passengers killed in the Charing Cross collision on the District Line of the L.P.T.B. on May 17. He explained that a train could leave Charing Cross only when there was a green signal, because a train stop would stop it if the signal were at danger. Once a train had entered a section it ought to be absolutely safe; it was not safe on this occasion, and they had to find out why. The driver of the Inner Circle train did not run past a danger signal. He entered the section when the light was green. It ought to have been red for as long as the preceding train was in that section, but did not remain so. The driver felt perfectly certain from his past experience and knowledge that there could be nothing in front of him in that section, but to his horror, as he was getting up speed, he suddenly found there was a train in front. He did his best to stop, but crashed into it.

The explanation lay in the fact that the signal device was not in order. During the preceding night, work had been done by signal linesmen, including a job at Charing Cross in the particular signal cabin concerned. [This is normally switched out on weekdays, and was so on the day of the accident.—Ed., R.G.] It consisted of replacing a short length of cable. The man who did it unscrewed two terminals. In replacing the old cable with new cable he screwed on the top terminal correctly, but screwed the bottom part of the cable to a wrong terminal. He ought to have known it was wrong. By this unfortunate mistake the workman had upset the safety device so that red was not shown long enough at Charing Cross to allow the train to get out of the section. It was the duty of a supervisor to see if the work was all right, and a very simple thing for him to have tested it, but he did not.

Another question was: Why was it that with the signal device working incorrectly so many trains ran safely between 5 o'clock in the morning and just before 10 o'clock, when the accident happened? The answer was that no train was held up in that section until just before then. The trains were going smoothly along. There was no check in the tunnel and therefore the mistake was not observed. A driver had noticed something wrong with the signals, and a message was sent from Temple to Charing Cross by a rather inexperienced porter, who was told to do it by the station foreman—a man whom the jury might feel ought to have telephoned himself. It was sent in such a way that at Charing Cross they could not understand what was meant. That caused delay. Eventually a comprehensible message was obtained. Station officials rushed to stop the trains and inform

the controller at Earls Court, but were just a minute or two too late.

C. Holbourn, driver of the Barking train, which was run into, said he left Charing Cross at 9.52 a.m. with correct signals, but saw the tail of a train in the tunnel. He stopped as fast as possible and it moved off. He could not think what had happened. Thirty seconds after being stopped by a red signal he found himself on the floor. He relit his hand lamp, ran eastwards and succeeded in stopping a westbound train. He operated the tunnel wires and caused current to be cut off.

A. G. McLean, driver of the colliding Inner Circle train gave similar evidence to that reported in THE RAILWAY GAZETTE last week (page 1039), as did Mr. J. P. Thomas, General Manager (Railways), L.P.T.B., who informed the Coroner that the means to be taken to prevent a recurrence of such a mistake as was made in the signal wiring on this occasion would include other measures besides insistence on tests. The driver of a preceding train had informed the station foreman at Temple that the Charing Cross starting signal was showing green, when it should have shown red. On receiving that message the foreman should have taken the matter in hand personally. At that time Temple station was very busy.

Mr. R. Dell, Assistant Signal Engineer, L.P.T.B., said the signal showed green too early because a wire had been connected to a wrong terminal. Eeles, the man who did the wiring, had been employed at the signal department for about 13 months. His immediate superior was Chief Lineman Beer, who should have tested the correct operation of the signal after Eeles had finished. He had always found Beer and Eeles steady, reliable workmen.

C. W. Eeles said he had been employed as installer for 13 months. He received instructions from Beer about the adjustment the same night. The work he did was general tidying up of the wires in the cabin. The circuit-breaker box in question was the last one he did. The whole lot of wires had to be altered; he renewed a wire in the box and thought it was attached to the bottom right hand terminal, but this was wrong. In replacing a new length he attached it to the bottom right hand terminal. In some cases he was supposed to know details of his wiring but in this case he did not know the effect of what he did. He did not know it was an alteration.

He went to see the first train coming through to see if the signal was working, and he was sure it was quite all right. He could not see how he could have replaced a wire incorrectly as there was only one screw out of a terminal at one time.

A. G. Beer said he was Chief Lineman and had been employed by the board for 16 years. He saw Eeles

working on the circuit-breaker box and knew the importance of it and the effect of it on the signalling. Having a lot of other things to do he failed to test; he did not think of it, but now realised he should have done it. He was busy with other work but could have made the test by withdrawing a fuse. He did not remember exactly what he said to Eeles but made some general remark such as "Are you O.K.?" The reply was favourable. He had no reason to distrust Eeles or suppose that anything was wrong. It was the practice to test in such cases; it was not left to his discretion.

Mr. Ingleby Oddie said questions of negligence which might be very serious arose in this case; there were four or five more witnesses to call and he adjourned the inquest until the afternoon of Thursday, June 2.

### G.W.R. GOLD MEDALLISTS' OUTING.

—The sixteenth annual outing of Great Western Railway ambulance gold medallists, i.e., holders of the company's award for from 15 to 35 years' first aid efficiency, a gathering unique in ambulance circles, was held in London on Saturday, May 28. It began with luncheon at Lyons' Corner House, followed by a sight-seeing coach tour of London, Windsor Castle, and Hampton Court. The number participating constituted a record, about 700 medallists and wives assembling from all parts of the line.

### STEWARTS AND LLOYDS LIMITED.—

Low costs of production by Stewarts and Lloyds Limited have enabled that company to supply its customers in the home market with tubes of the highest quality at prices not appreciably higher than those ruling in 1913. This was stated by the Chairman (Mr. A. C. Macdiarmid) at the recent annual meeting. The tonnage of tubes dispatched from the company's works in the United Kingdom showed an increase of 11.2 per cent. in 1937 as compared with 1936. The overall price per ton realised in 1937 was in the home market 6.8 per cent. higher and in the export market 31.8 per cent. higher than in 1936. Of the production of the home works 40 per cent. was exported in 1937—much the same proportion as in 1936. Through Corby the company had achieved the economies of an integrated plant from the ore to the finished tube. It was also their policy to have concentration of production in large units of plant with specialisation in the separate works. The third line of policy was the rationalisation of the British tube industry as a whole. Intense concentration on research had also contributed greatly to the results of 1937. The company now had well established and successful works in South Africa and Australia working in co-operation with local interests, and during the year it had entered into an arrangement for the erection of a tube works in India in partnership with the Tata Iron & Steel Co. Ltd.

## QUESTIONS IN PARLIAMENT

### Notification of Disturbances

Mr. B. Bull (Middlesex—Enfield—U.), on May 25, asked the Minister of Transport, whether he was aware of the imperfect method of the London Passenger Transport Board in notifying the public on the occasion of any accident on its system as to the nature and extent of the dislocation of the traffic; and whether he would consult with the board with a view to making more adequate arrangements on these occasions for the information and guidance of the travelling public.

Dr. Leslie Burgin: I am informed by the London Passenger Transport Board that when there is any extended disturbance of the board's railway services all stations are notified by telephone from the central control office as soon as possible, and special notice boards are prominently displayed at every station informing passengers which section of line is affected and what are the alternative routes available. I understand that in the case of the accident which occurred on the District Railway shortly before 10.0 a.m. on May 17 the evening newspapers and press agencies were informed at 10.15 a.m. of the interruption to the train service, and at 11 a.m. were given details of the emergency bus services which were in operation.

### Automatic Train Control

Mr. H. C. Charleton (Leeds, S.—Lab.) on May 26 asked the Minister of Transport, whether he could state the number of railway accidents since 1930, which, in the opinion of the inspectors, might have been prevented if some system of automatic train control had been in operation, as recommended in 1930 by the committee appointed to consider this question.

Dr. Leslie Burgin (Minister of Transport): In the eight years 1930 to 1937 inclusive, 112 inquiries were held into train accidents. In the opinion of the Inspecting Officers, automatic train control in one form or another might have prevented, or mitigated the effects of, 31 of these accidents and automatic train control of the warning type might have prevented 13 of these.

Mr. Charleton (Leeds, S.—Lab.) on May 26 also asked the Minister of Transport, if he could state the number of engine drivers on the Great Western Railway who were reported for passing home signals at danger when working trains fitted with an automatic continuous brake during the years 1930 and 1937, respectively.

Dr. Leslie Burgin: I am in communication with the Great Western Railway Company and will let the hon. member know the result.

### Diesel Engines

Captain L. G. F. Plugge (Rochester, Chatham—U.) on May 30 asked the Minister of Transport, if he could state the number of railway locomotives in

this country which were at present fitted with diesel engines.

Captain Austin Hudson (Parliamentary Secretary to the Ministry of Transport): I understand that the four main-line railway companies own 36 diesel locomotives which are used for shunting purposes and 26 diesel rail motor passenger vehicles.

### Free Travel

Colonel J. Baldwin-Webb (The Wrekin—U.) on May 31 asked the Minister of Transport (1) whether he was aware of the indignation caused in the West Midland traffic area by the proposal of the traffic commissioners to enforce the proposal put forward by himself and the railway companies to reduce to three the age-limit for children at which free transport in public-service motor vehicles could be provided; and whether, in view of the special circumstances existing in the Birmingham area, he could issue revised instructions in this matter; and (2) whether he was aware that, according to the Report of the chief constable of Birmingham, some 52,000 children travelled on public-service vehicles free of charge on Easter Monday in that area; and whether, in view of the hardship which would result from making it necessary to pay fares for a large proportion of these children, he would withdraw his instruction that the freedom from fares for children under five years of age must now be reduced to three years.

Dr. Leslie Burgin (Minister of Transport): In certain cases which have come before me on appeal under Section 81 of the Road Traffic Act, 1930, I have supported the contention that the maximum age for free travel of children on public service vehicles should be uniform and should be three years. I understand that the Traffic Commissioners for the West Midland Traffic Area have recently proposed to revise the conditions of certain licences, but I do not know what decision they will reach.

### Advertising Excursion Facilities

Colonel Sandeman Allen on June 1 asked the Postmaster-General whether his attention had been drawn to a recent announcement by the British Broadcasting Corporation in its news bulletin, advertising railway excursion facilities in connection with Chatham navy week; and, as under its charter the British Broadcasting Corporation is not allowed to broadcast advertisements, what steps he had taken to prevent a recurrence of this breach of the charter.

Sir Walter Womersley (Assistant Postmaster-General): The announcement in question was broadcast at the request of the Admiralty, and called attention to the special facilities available for railway travel to Chatham, Portsmouth, and Plymouth during

Navy Week. In complying with the Admiralty's request, the British Broadcasting Corporation acted in conformity with the provisions of its licence.

### Length of Underground Trains

Mr. B. B. Bull (Middlesex—Enfield, U.) on June 1 asked the Minister of Transport whether he would make representations to the London Passenger Transport Board on the inconvenience to the public caused by reducing the number of carriages of Underground trains between the hours of 11 and 4; and whether he would suggest to the board the reconsideration of this policy.

Dr. Leslie Burgin: I am advised by the London Passenger Transport Board that it would not be justified in increasing the length of the trains between the hours mentioned, during which there is a much reduced use of the board's railways.

### Accidents on the Underground

Mr. Daniel Somerville (Willesden, E.—U.) on June 1 asked the Minister of Transport how many inquiries within the last 12 months had been made into accidents on the underground systems of the London Passenger Transport Board; and whether he could state their nature and findings.

Dr. Leslie Burgin: During the last twelve months the inspecting officers of railways have held inquiries into two train accidents on the railway system of the London Passenger Transport Board. The findings in each case will be published in due course.

## Parliamentary Notes

### Road Haulage Wages (No. 2) Bill

This Bill passed the Committee stage and was read the third time and passed in the House of Commons on May 27. It was read the first time in the House of Lords on May 30, and is to be read the second time on June 14.

### Royal Assents

The Royal Assent was given on May 26 to the following Acts of 1938: Blackpool Improvement; Workmen's Compensation (Amendment).

### L.M.S.R. Bill

The House of Lords read this Bill, with the amendments, the third time and passed it and returned it to the House of Commons on May 26. These amendments were considered and agreed to in the House of Commons on May 30.

### L.N.E.R. Bill

In the House of Commons on May 30 this Bill was read the third time and passed. It was read the first time and referred to the Examiners in the House of Lords on May 31.

### Southern Railway Bill

This Bill was read the third time and passed in the House of Commons on May 26. On the same day it was read the first time in the House of Lords.



## Railway and Other Reports

### Bengal-Nagpur Railway Co. Ltd.

The directors announce an interim half-yearly dividend of  $\frac{1}{4}$  per cent. on the ordinary stock, payable on July 1, making, with the guaranteed interest of  $1\frac{1}{2}$  per cent. then due, a distribution of 2 per cent.

**Canadian National Railway Company.**—The estimated earnings of the Wellington, Grey & Bruce Railway Company for the half year ending June 30, 1938, applicable to meet interest on the 7 per cent. bonds, will admit of the payment of £3 18s. 8d. per £100 bond, and this payment will be applied as follows:—£2 1s. 10d. in final discharge of Coupon No. 112 due July 1, 1926; £1 16s. 10d. on account of Coupon No. 113 due January 1, 1927, and will be made on and after July 1 next, at the offices of the Canadian National Railway Company, 42/5, New Broad Street, E.C.2. Coupons must be left three clear days for examination.

**George Spencer, Moulton & Co. Ltd.**—Net trading profit for the year 1937 amounted to £60,474, against £31,794 for 1936. After deducting £8,408 for debenture and bank loan interest and applying £14,600 (against £5,100) to reserve for taxation, and making a special provision of £8,000 for depreciation of plant, there is a balance available of £76,545, compared with £47,079. It is proposed to transfer £44,886 to reserve, increasing that account to £120,000, and to resume dividends after a lapse of six years with a payment of 5 per cent. on the ordinary capital, which will absorb £9,353. The amount to be carried forward is £22,306, compared with £47,079 brought in.

**Maidstone & District Motor Services Limited.**—This company, which is controlled jointly by the Southern Railway Company and Tilling & British Automobile Traction Limited, secured for the year ended March 31, 1938, a profit of £112,958 (against £114,570 for 1936-37), to which must be added £22,815 brought forward from the previous year, making a total of £135,773. The dividend on the  $6\frac{1}{2}$  per cent. cumulative preference shares takes £13,000, the dividend of 10 per cent. for the whole year on the ordinary shares requires £75,000, and the bonus of  $1\frac{1}{4}$  per cent. on the ordinary shares requires £9,375. These dividends and the bonus are unchanged. The sum of £15,000 (against £15,103) is allocated to the reserve fund, leaving £23,398 to be carried forward.

**Hants & Dorset Motor Services Limited.**—The directors of this company, which is controlled jointly by Tilling & British Automobile Traction Limited and the Southern Railway Company, report for the year ended March 31 last, traffic receipts and other income (less operating, management, and general expenses, and provision for depreciation) of £158,622. The net

profit after providing for taxation, vehicle licences, directors' fees, &c., amounts to £64,039. Adding £14,454 brought in makes a total available of £78,493. The preference dividend takes £9,750, and on the ordinary shares the dividend for the year is to be 10 per cent, tax free, the same rate as for the previous year. This time there is no bonus of  $2\frac{1}{2}$  per cent. as in 1936-37, and the total amount distributed is £45,000, against £50,000. The sum of £2,000 is again transferred to general reserve, and it is proposed to pay a bonus to employees of £1,750, leaving £19,993 to be carried forward. Authorised capital was increased during the year to £700,000 by the creation of 150,000 additional ordinary shares of £1 each, and the issued capital increased by the allotment of 50,000 ordinary £1 shares. The omnibus station at West Marlands, Southampton, has been extended, and a new garage and offices are in course of erection at Southampton.

## "Safety First" on the Reichsbahn

Dr. H. A. Martens, an officer of the German State Railway and a well-known writer on accident prevention, recently lectured on this subject before the Verwaltungs-Akademie in Berlin, a body formed for the discussion of administrative questions among members of the State departments and public bodies. The lecture was accompanied by a display of pictures illustrating the numerous posters issued in connection with the "Safety First" movement on the Reichsbahn.

Dr. Martens is reported in *Die Reichsbahn* to have placed the maintenance of health among the first considerations, for this means happiness for the individual and his dependents, and the consequent well-being of the community. Accident prevention is therefore a prime necessity of life for the workers. Such prevention is a problem of propaganda, psychology, technical knowledge, education, and community sense. The work should be carried on as a State service, under the motto "Your best protection is your own carefulness," already used by the railways and post office.

In any large undertaking it is indispensable to place accident prevention work under a central control to get the best results with the least outlay, and the department concerned with it should rank as high as any other. About 80 per cent. of all personal accidents are attributable to neglect on the part of the individual concerned; they can be prevented at no cost by personal care. Pictures and films ought to show only correct action and procedure, and men should be taught to avoid accidents by diligently practising right methods of working. Comprehensive and accurate statistics are necessary to enable systematic accident prevention measures to be effective.

## Norwegian Cruise of MS. "Vega"

On Tuesday morning last, the Bergenske Steamship Company's new motorship *Vega*, which will go into service to-morrow (June 4), on the B. & N. Line route between Newcastle, Stavanger, and Bergen, brought to Newcastle a party of guests who had spent an enjoyable week-end visiting Norway. The cruise had been organised by the company, with the co-operation of the L.N.E.R., the Norwegian State Railways, and various travel organisations.

Mr. T. S. Falck, Jr., and other directors of the Bergenske Company, acted as hosts. The *Vega* sailed for Norway on Friday of last week, and at lunch that day, among toasts proposed, were "The Guests" (proposed by Mr. Einar Joys, and responded to by The Rt. Hon. The Lord Mayor of Newcastle-upon-Tyne); "The Tyne Improvement Commission"; and "The London & North Eastern Railway Company" (proposed by Mr. T. S. Falck, Jr., and responded to by Sir Arthur Munro Sutherland and Mr. C. M. Jenkin Jones).

In an interesting souvenir booklet, entitled "Some Facts about the *Vega*," issued for the occasion, it is stated that from the time of entry of this vessel into service, it will maintain (in conjunction with the *Venus*) four sailings weekly between Bergen and Newcastle, and *vice versa*, of which two in each direction will be *via* Stavanger and Haugesund. The passenger capacity of the service will thus be increased from 1,380 to 3,000 a week. The growing popularity of this route between England and Norway, which takes about 18 hours to cover, is indicated by a comparison of traffics in 1929, 1936, and 1937. In the year 1929, when the company contracted for the *Venus*, the number of passengers carried was 15,300; in 1936, when the contract for the *Vega* was signed, the total number was 27,800; while, in 1937, this figure increased to over 30,000. A fast and comfortable service by through train or through coaches is provided by the L.N.E.R. between London (King's Cross) and Newcastle (Tyne Commission Quay) in connection with B. & N. Line sailings.

## Forthcoming Meetings

June 9 (*Thurs.*).—Société Anonyme des Chemins de fer de Tournai à Jurbise et de Landen à Hasselt (en liquidation) (Ordinary General), 19, Rue des Cultes, Brussels, at 11 a.m.

## Forthcoming Events

June 2-7.—Railway Students' Association, at South Wales, Convention.  
June 8-12.—Institution of Locomotive Engineers, at Glasgow, Summer Meeting.  
June 15 (*Wed.*).—Institution of Civil Engineers, Great George Street, London, S.W.1, 7.45 p.m. Conversazione.  
June 17-21.—Stephenson Locomotive Society, Summer Tour to Ireland and Western Scotland.

## NOTES AND NEWS

**The Kearney Tyne Tube Again.**—We understand that application has been made to the Minister of Transport by Mr. E. W. Chalmers Kearney for an order authorising the construction of an electric tube railway under the River Tyne between South Shields and North Shields. The estimated cost of the scheme is £400,000.

**Canadian Pacific Earnings.**—Gross earnings of the Canadian Pacific Railway for the month of April, 1938, amounted to \$10,414,000, a decrease of \$1,456,000 in comparison with April, 1937. In the working expenses of \$9,914,000, there was a decrease of \$107,000, leaving net earnings \$1,349,000 lower, at \$500,000. Aggregate gross earnings for the first four months of 1938 were \$40,580,000, a decrease of \$2,957,000, and the net earnings of \$1,748,000 showed a fall of \$3,743,000.

**Canadian National Earnings.**—For the month of April, 1938, gross earnings of the Canadian National Railways were \$13,924,655, a decrease of \$3,131,743 in comparison with April, 1937. Operating expenses (\$14,623,788) showed a decrease of \$183,596, with the result that there was a deficit of \$699,133, against net earnings of \$2,249,015. Aggregate gross earnings for the first four months of 1938 amounted to \$55,147,637, a decrease of \$6,885,950, and, as against net earnings of \$4,566,511 for the first four months of 1937, there was a deficit on working of \$4,430,786.

**The Sligo-Tuam Line.**—A rumour of the possibility of closing the Sligo and Tuam section of the Great Southern Railways (Eire), led to protests being made at a meeting held at Clarendon on May 30. Among those present was Mr. J. O'Dowd, representing the Traffic Manager of the railway. He remarked that the company had not stated that it was closing the line in question, and he suggested that the best way to keep the line open was to give the traffic to the company. Reports of the proceedings at the meeting are to be sent to the railway company and to the Minister for Industry and Commerce.

**L.M.S.R. Motive Power League.**—Sir Josiah Stamp, Chairman of the L.M.S.R., presented, on May 25 last, the winning District Locomotive Superintendents with shields for success in the company's Motive Power League (for the reduction of engine casualties) at a ceremony at Euston. A number of directors and chief officers, and headquarters and local representatives of the Operating Department attended. The shield for first place was won, for the second year in succession, by Plaistow (Mr. J. E. Wood). The second and third districts were Shrewsbury (Mr. W. H. Ensor), and Bristol (Mr. A. H. Whitaker), respectively. The beneficial effect of reduced engine casualties upon the general efficiency of the railway was stressed by speakers who included Messrs. E. J. H. Lemon (Vice-President),

C. R. Byrom (Chief Operating Manager), and D. C. Urie (Superintendent of Motive Power). It was stated that engine casualties for the latest year of the League's working again showed a very substantial reduction on the previous twelve months.

**B.O.T. Standards Department Change of Address.**—The Standards Department of the Board of Trade has removed from 6 and 7, Old Palace Yard, S.W.1, to new premises at Chapter Street House, Chapter Street, S.W.1. The telephone number is Victoria 7032.

**Diesel Engine Users' Summer Meeting.**—The summer meeting of the Diesel Engine Users' Association will be held on June 16, when members will visit the B.B.C. transmitting station at Droitwich. The party will travel by L.M.S.R. in both directions between Euston and Birmingham, whence the visit to Droitwich will be made by motorcoach. The equipment at Droitwich includes four diesel engines, totaling 3,000 b.h.p.

**L.N.E.R. Norwich Cathedral Poster.**—A new poster illustrating the cloisters, Norwich Cathedral, was issued by the L.N.E.R. on May 28, to coincide with the visit to Norwich of the Queen to reopen the cloisters, after the restoration they have lately undergone. The artist, Mr. H. Tittensor, makes the centre of interest in his study a procession of choristers, moving against a dark background on which the richly traceryed windows are suggested by patterns thrown by the light passing through them. The processional scene is balanced by the prominence given to an elaborately carved doorway on one hand, and the dark mass of a pillar on the other, with the vaulted roof linking the two and with them forming a frame for the colourful human interest of the poster.

**Great Eastern Suburban Services.**—The Railway Club completed the 1937/1938 session with the monthly meeting held at the Royal Scottish Corporation Hall, Fetter Lane, E.C.4, on May 26, when Mr. B. R. White read a paper on the "Great Eastern Suburban Services of the London & North Eastern Railway." Mr. White traced the growth of the suburban system from the opening of the Eastern Counties Railway from Mile End to Romford in 1839 up to the opening in 1903 of the Fairlop loop from Woodford to Ilford, the last section of the Great Eastern Railway suburban lines. Dealing with the train services, Mr. White made special reference to the "intensive" train service introduced in July, 1920, on the Chingford and Enfield lines. Post-grouping developments were described, including the widening to Shenfield, colour-light signalling on the Enfield and Chingford lines, and improved rolling-stock. In conclusion, mention was made of the extension of the Central

London Line and the electrification to Shenfield, but Mr. White maintained that the Great Eastern suburban services will always be an example of what can be achieved in the economic carrying of a huge volume of passenger traffic without the aid of electrification.

**L.M.S.R. Clyde Service for Exhibition Visitors.**—As an added attraction for visitors to Glasgow in connection with the Empire Exhibition, the L.M.S.R. inaugurated, on Wednesday, June 1, a daily service of motor-cruisers on the Clyde. Two new boats, accommodating 100 passengers, have been built for this service by Wm. Denny & Brothers, Dumbarton, and are providing a series of short cruises both on weekdays and Sundays during the exhibition period. These cruises start from Bridge wharf, Glasgow, and proceed down river to a point a short distance beyond John Brown & Company's shipyard at Clydebank, giving passengers a good view of the new Cunard White Star liner now under construction, as well as of Clyde shipping and shipyards generally. This service works at hourly intervals from 9.30 a.m. to 7.30 p.m. (except 12.30 p.m.) on weekdays, and hourly from 2.0 p.m. to 7 p.m. on Sundays. The cruise fare is 1s. return.

**British Oxygen Co. Ltd.**—Speaking at the recent meeting of the British Oxygen Co. Ltd., Mr. S. J. L. Hardie, the Chairman, said that the consolidated profits of the organisation for the year 1937, including the company's share of the profits of its various subsidiary companies at home and overseas, amounted to £1,160,181, as compared with £995,781 in 1936, showing continued progress both in home and overseas business. Since the commencement of this year the trade of their home and overseas companies still showed continuous expansion as compared with 1937, which was a record year. There was still a large programme of extension both at home and overseas to provide for the development of new uses and the general expansion of the industry. At an early date the directors would put forward details of a scheme for increasing the preference capital and consolidating it with the present issued preference capital, with a view to the early issue of preference capital to provide for the expansions and developments to which he had alluded.

**United Railways of the Havana.**—Meetings of the debenture-holders and shareholders of the United Railways of the Havana and Regla Warehouses Limited were convened for May 30 to consider an extension of the existing moratorium which expires on October 1. In a circular issued by the directors the opinion, with which the stockholders' committee agrees, is expressed that the present moratorium should be extended by at least two years, with power to the committee to continue it for another year. An important modification proposed is the postponement of the date for the final redemption of the 4½ per cent. Cuban Central debentures from August 1, 1942, to

August 1, 1944. The directors point out that from July 1, 1937, up to May 7, 1938, receipts from the working of the railways have fallen £106,280 compared with the corresponding period of the previous year. Low prices for sugar and molasses have delayed shipments to the detriment of spending power and movement of general goods and passengers. Wages and the cost of fuel have increased, the former due mainly to labour laws and the latter by reason of increase in price.

**The Santander - Mediterranean Railway.**—Mr. F. R. Phillips, presiding at the general meeting of the Central Mining and Investment Corporation on May 25, referred to the Santander Mediterranean Railway, in which the company is interested through the Anglo-Spanish Construction Company. The revenue of the railway, he said, has continued to grow, both on civil and military account. The line, which is entirely in country controlled by General Franco, is in good order, and by the service it has rendered in recent times, has most convincingly proved its essential value to the system of Spanish

communications. Meanwhile, however, the Anglo-Spanish Construction Company has been unable to repay any further portion of its debenture liability. Part of its assets consists of a holding of Spanish Government Treasury Gold Bonds which has been immobilised in Madrid since the beginning of the civil war.

**Engineers and Air Raid Precautions.**—The Institution of Civil Engineers, with the approval and collaboration of the Air Raid Precautions Department, has appointed a committee for compiling and publishing authoritative technical information on precautions against air attack for the use of engineers in their work of design, construction, and maintenance of structures and other engineering work, including public utility services. This committee which, under the chairmanship of the President of the institution, consists of engineers conversant with both the practical and scientific aspects of the subject, has been promised by the Air Raid Precautions Department all possible assistance in the form of available scientific data.

### British and Irish Traffic Returns

GREAT BRITAIN	Totals for 21st Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
L.M.S.R. (6,852½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	467,000	504,000	- 37,000	9,042,000	9,297,000	- 255,000
Merchandise, &c. ...	458,000	502,000	- 44,000	10,030,000	10,223,000	- 193,000
Coal and coke ...	222,000	269,000	- 47,000	5,698,000	5,764,000	- 66,000
Goods-train traffic ...	680,000	771,000	- 91,000	15,728,000	15,987,000	- 259,000
Total receipts ...	1,147,000	1,275,000	- 128,000	24,770,000	25,284,000	- 514,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	302,000	319,000	- 17,000	5,897,000	6,091,000	- 194,000
Merchandise, &c. ...	312,000	356,000	- 44,000	6,981,000	7,070,000	- 89,000
Coal and coke ...	214,000	257,000	- 43,000	5,366,000	5,373,000	- 7,000
Goods-train traffic ...	526,000	613,000	- 87,000	12,347,000	12,443,000	- 96,000
Total receipts ...	828,000	932,000	- 104,000	18,244,000	18,534,000	- 290,000
G.W.R. (3,737 mls.)						
Passenger-train traffic...	197,000	210,000	- 13,000	3,789,000	3,892,000	- 103,000
Merchandise, &c. ...	194,000	209,000	- 15,000	4,058,000	4,088,000	- 30,000
Coal and coke ...	102,000	124,000	- 22,000	2,421,000	2,397,000	+ 24,000
Goods-train traffic ...	296,000	333,000	- 37,000	6,479,000	6,485,000	- 6,000
Total receipts ...	493,000	543,000	- 50,000	10,268,000	10,377,000	- 109,000
S.R. (2,147 mls.)						
Passenger-train traffic...	304,000	326,000	- 22,000	5,878,000	5,988,000	- 110,000
Merchandise, &c. ...	63,000	66,000	- 3,000	1,265,500	1,272,500	- 7,000
Coal and coke ...	27,000	35,000	- 8,000	680,500	692,500	- 12,000
Goods-train traffic ...	90,000	101,000	- 11,000	1,946,000	1,965,000	- 19,000
Total receipts ...	394,000	427,000	- 33,000	7,824,000	7,953,000	- 129,000
Liverpool Overhead ...	1,340	1,338	+ 2	27,986	25,280	+ 2,706
(6½ mls.)						
Mersey (4½ mls.) ...	3,980	3,839	+ 141	91,869	88,626	+ 3,243
*London Passenger Transport Board ...	580,800	470,700	+ 110,100	27,035,400	26,436,200	+ 599,200
IRELAND						
Belfast & C.D. pass. ...	2,020	2,217	- 197	38,840	40,597	- 1,757
(80 mls.)						
" " goods ...	440	471	- 31	9,237	10,427	- 1,190
" " total ...	2,460	2,688	- 228	48,077	51,024	- 2,947
Great Northern (543 mls.) pass. ...	9,150	9,950	- 800	181,850	181,600	+ 250
" " goods ...	9,150	9,850	- 700	183,350	200,750	- 17,400
" " total ...	18,300	19,800	- 1,500	365,200	382,350	- 17,150
Great Southern (2,076 mls.) pass. ...	32,750	31,012	+ 1,738	627,321	619,704	+ 7,617
" " goods ...	38,199	39,828	- 1,629	831,329	884,135	- 52,806
" " total ...	70,949	70,840	+ 109	1,458,650	1,503,839	- 45,189

\* 48th week (before pooling).

Bus strike, 1937

### British and Irish Railway Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices	
			June 1, 1938	Rise, Fall
G.W.R.				
Cons. Ord. ...	67½	55½	48½	-2½
5% Con. Prefce. ...	127	108	113½	-1
5% Red. Pref. (1950) ...	113	109	109½	—
4% Deb. ...	113½	102½	108	—
4½% Deb. ...	118	106	111½	—
4½% Deb. ...	124½	112	117½	—
5% Deb. ...	136½	122½	129½	—
2½% Deb. ...	76	64	68½	—
2½% Rt. Charge ...	1337½	118	127½	—
5% Cons. Guar. ...	133¾	116½	126½	—
L.M.S.R.				
Ord. ...	361½	253½	161½	-1¼
4% Prefce. (1923) ...	82½	65¾	46½	-4
4% Prefce. ...	92½	77¾	65	-2½
5% Red. Pref. (1955) ...	107¾	102	98½	-1
4% Deb. ...	108	99¼	101	—
5% Red. Deb. (1952) ...	117½	111	111½	—
4% Guar. ...	104	957½	96½	-1½
L.N.E.R.				
5% Pref. Ord. ...	12½	6¾	4¾	-¼
Def. Ord. ...	614	35½	27½	-½
4% First Prefce. ...	79½	63	46	-4
4% Second Prefce. ...	31½	21	15	-2
5% Red. Pref. (1955) ...	101¼	89¾	80½	-6
4% First Guar. ...	103	917½	89½	-4
4% Second Guar. ...	97½	85½	79½	-4½
3% Deb. ...	84½	74	75	—
4% Deb. ...	107½	98½	100½	—
5% Red. Deb. (1947) ...	113½	106½	109½	—
4½% Sinking Fund Red. Deb. ...	1103½	105½	108	—
SOUTHERN				
Pref. Ord. ...	98½	83½	70	-4½
Def. Ord. ...	27½	16¾	17½	-1½
5% Pref. ...	126½	105½	109½	-2
5% Red. Pref. (1964) ...	118	110¼	113½	—
5% Guar. Prefce. ...	133¾	116¾	126½	—
5% Red. Guar. Pref. (1957) ...	118½	111½	115	—
4% Deb. ...	112	101¼	106	-½
5% Deb. ...	135¾	123½	127½	—
4% Red. Deb. 1962-67 ...	113	105	108½	—
BELFAST & C.D.				
Ord. ...	5	4	4	-½
FORTH BRIDGE				
4% Deb. ...	106	99½	100½	—
4% Guar. ...	105¾	99	101½	—
G. NORTHERN (IRELAND)				
Ord. ...	11	5	4¾	-¾
G. SOUTHERN (IRELAND)				
Ord. ...	50	21½	20	—
Prefce. ...	61	34	24	-5
Guar. ...	94¾	69½	59½	+½
Deb. ...	95	82½	78	-¼
L.P.T.B.				
4½% "A" ...	123¾	110½	116*	—
5% "A" ...	135	121½	125½*	—
4½% "T.F.A." ...	108¾	104	106*	-½
5% "B" ...	125	114½	117½*	-½
"C" ...	99¾	75	75½	-½
MERSEY				
Ord. ...	42¾	22	19	—
4% Perp. Deb. ...	103	96¾	100	—
3% Perp. Deb. ...	77½	74½	74½	—
3% Perp. Prefce. ...	68¾	61¼	64	—

\* ex-dividend



## CONTRACTS AND TENDERS

### Beyer-Garratts for Africa

Beyer, Peacock & Co. Ltd. has received an order from the Crown Agents for the Colonies, on behalf of the Nigerian Government Railway for four Beyer-Garratt locomotives of the 4-6-2 + 2-6-4 type, for the 45-lb. rail. These engines are similar to the 12 already in service on that system, and supplied by the same builders.

Beyer, Peacock & Co. Ltd. has also received an order, as announced in these columns in our last week's issue, for eight class NG/G16 narrow gauge locomotives for the South African Government Railways. These engines will be 2-6-2 + 2-6-2 Beyer-Garratts for the 2-ft. gauge.

The English Electric Co. Ltd. has received, from Transport Vehicles (Daimler) Limited, for the Bradford Corporation, a repeat order for ten double-decked all-metal bus bodies.

The directors of the Great Western Railway have authorised the placing of the following contracts:—

C. A. Hayes & Son Ltd.: Construction of a depot for Rowntree & Co. Ltd., at Sutton Harbour, Plymouth.

Caffin & Co. Ltd.: Earthworks, ballasting and construction of reinforced concrete foot-bridge, in connection with the new loop line near Pyle.

West's Rotinoff Piling & Construction Co. Ltd.: Reconstruction, widening and lengthening of Houndcombe Road bridge, Plymouth.

Fairfield Shipbuilding & Engineering Co. Ltd.: Supply of steel girders, and other iron and steelwork.

J. Morgan (Builders) Limited: Reconstruction, widening and lengthening of a bridge carrying the Pontypridd to Caerphilly line over Treforest Road, Pontypridd, Glam.

For Swindon Works:—  
Kitchen & Wade Limited: Provision of a horizontal firebox and boiler shell drilling machine in the "V" (Boiler) Shop, Locomotive Works.

At the Company's Docks:—

Penarth Pontoon Slipway & Ship Repairing Co. Ltd.: Overhaul of the ss. *St. Helier*.

Dorman, Long & Co. Ltd. has received an order from the Egyptian State Railways Administration for the supply of mild steel angles and channels (Ref. No. E.S.R. 1.243, total cost £369, delivery f.o.b. Middlesbrough).

J. Baker & Bessemer Limited has received an order from the Egyptian State Railways Administration for the supply of engine and tender tyres (Ref. No. E.S.R. 21.823, total cost £2,496, delivery f.o.b. Liverpool, Birkenhead, or Manchester).

Frederick Smith & Co. has received an order from the Egyptian State Railways Administration for the supply of copper wire (Ref. No. E.S.R. 30.421, total cost £1,042, delivery f.o.b. Liverpool).

The Bengal-Nagpur Railway Administration has recently placed the following orders:—

Tees-side Bridge & Engineering Works Limited: 250 drawbars.

Associated Locomotive Equipment Limited: Steam and exhaust cams.

Caprotti Valve Gears Limited: Modified exhaust cams.

### Coaches for Egypt

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received an order from the Egyptian State Railways Administration for 20 third class bogie coaches.

The Hunslet Engine Co. Ltd. has received orders from the Peruvian Corporation Limited for a 165-b.h.p. Hunslet diesel-mechanical locomotive for the Paita-Piura Railway and an 82-b.h.p. Hunslet diesel-mechanical locomotive for the Chimbote Railway.

Charles Brand & Son has received a contract from the London Passenger Transport Board for the construction of 1½ miles of tunnels from Wanstead station to Gants Hill station—a section of the extension of the Central Line from Liverpool Street to Epping, Ongar, and Hainault. Reinforced concrete segments will be used on three-quarters of a mile of running tunnels between Red Bridge and Gants Hill station. The contract, which amounts to £500,000, includes the station and escalator tunnels at Wanstead and Red Bridge stations.

The South Indian Railway Administration has placed the following orders to the inspection of Messrs. Robert White & Partners:—

Thomas S. Johnson Limited: 7,000 ft. galvanised steel piping.

A. Baylie & Co. Ltd.: 19 cwt. iron chain.

Ensign Lamps Limited: 10,614 electric lamps.

Siemens Electric Lamps & Supplies Limited has obtained a further contract from the G.W.R. for the supply of Siemens British-made electric lamps.

The Crown Agents for the Colonies have recently placed the following orders:—

Hunter-Penrose Limited: Press.

H. Berry & Co. Ltd.: Press.

Guest, Keen & Nettlefolds Limited: Rail clips.

Lancashire Steel Corporation Limited: Rails and fishplates.

United Steel Cos. Ltd.: Rails and fishplates, and sleepers.

Appleby-Frodingham Steel Co. Ltd.: Rolled steel joists.

P. & W. MacLellan Limited: Rolled steel joists, steel, and steel sections.

Patent Shaft & Axletree Co. Ltd.: Standard steel deck plate girder bridges.

Whitehead Iron & Steel Co. Ltd.: Steel.

Newport & South Wales Tube Co. Ltd.: Steel poles and tubes.

Dorman, Long & Co. Ltd.: Steel troughing and steelwork.

Wm. Bain & Co. Ltd.: Steelwork.

Horseley Bridge & T. Piggott Limited: Steelwork.

British Thomson-Houston Co. Ltd.: Substation extension.

Ferguson, Pailin Limited: Substation switchgear.

Anderson Foundry Co. Ltd.: Switches and crossings.

Allen West & Co. Ltd.: Switchgear.

Ericsson Telephones Limited: Telephones.

W. & T. Avery Limited: Testing machine.

Stewarts and Lloyds Limited: Tubing.

Merryweather & Sons Limited: Turntable and water tower.

J. Baker & Bessemer Limited: Tyres.

Thos. Firth & John Brown Limited: Tyres.

Owen & Dyson Limited: Wheels and axles.

Whitecross Co. Ltd.: Wire.

Hirsch Kupfer und Messingwerke has received an order from the Egyptian State Railways Administration for copper plates (Order No. 6.278, total cost £217, delivered f.o.b. Hamburg).

The General Electric Co. Ltd. has received a contract from the G.W.R. for a 12 months' supply of Osram lamps.

Herbert Morris Limited has received orders from the New Zealand Government for two overhead travelling cranes and an electric crab.

Wota (India) Limited has received orders from the Indian Stores Department for 280 inside buffer cases.

Skoda (India) Limited has received orders from the Indian Stores Department for 26 pairs of disc-centred wheels and axles, nine crank axles, and 360 carriage and wagon tyres.

Associated Electrical Industries has received an order from the Bengal-Nagpur Railway Administration for 2,100 headlight lamps, Mazda type, to be supplied by British Thomson-Houston Co. Ltd.

Smith & McLean Limited has received an order from the South Indian Railway Administration to the inspection of Messrs. Robert White & Partners for 987 panel sheets for carriages.

Brooker Dore & Co. Ltd. has received an order from the Egyptian State Railways Administration for tinned sheets (Ref. E.S.R. 1.428, total cost £215, delivered f.o.b. Swansea).

P. & W. MacLellan Limited has received orders from the Egyptian State Railways Administration for steel joists (Order No. 1.426, total value £795, delivered f.o.b. Gabbary, Alexandria), and for mild steel (Order No. 1.429, total cost £197, f.o.b. Glasgow).

### G.W.R. Works to be Undertaken

**BRIDGE RECONSTRUCTIONS.**—The following bridge works are to be carried out:—

Reconstruction of the bridge carrying the Worcester and Hereford line over a public road, near Ledbury.

Reconstruction of the span carrying the up relief Didcot-Chester line over the River Shipwash, near Oxford.

Widening and reconstruction of bridge over the Stratford-on-Avon Canal at Alcester Road South, Birmingham.

The bridge carrying Westwick Road over the railway line at Puxton is to be reconstructed and lengthened, and at the same time widening and strengthening will also be effected, at the request of the Somerset County Council.

A new bridge over the railway is to be provided at Lostwithiel by the Cornwall County Council.

Under arrangement with the company, the Rhondda Urban District Council will reconstruct, strengthen, raise, and widen the Bridge Street overbridge at Tonypandy, at the same time reconstructing the footbridge to a new alignment.

**CONTAINERS FOR ICE CONVEYANCE.**—Six insulated containers of 3 tons capacity are to be constructed for the conveyance of dry ice in bulk from the Carbo-Ice Industries Limited, Treforest, to London, and a distribution centre is to be provided for the firm at South Lambeth.

**BACTERIOLOGICAL TEST ROOM FOR DRINKING WATER SUPPLIES.**—All drinking water supplies, the sources of which originate on the company's property, are to be subjected to periodical analysis and bacteriological tests, and for this purpose a bacteriological

**Canadian National Railway Company**

WELLINGTON GREY & BRUCE RAILWAY COMPANY,  
7 PER CENT. BONDS.

At the semi-annual ballot for May, 1938, the following Wellington Grey & Bruce Railway Company 7 per cent. Bonds were drawn and will be paid at par at the offices of the Canadian National Railway Company in Montreal, Canada, or at Orient House, 42/5, New Broad Street, London, E.C.2, England, on the 1st July next, that is to say, Bonds numbered: 204, 586, 625, 809, 1049, 1189, 1231, 1397, 1405, 1409, 1656, 1818, 1842, 1885, 1975, 2024, 2152, 2165, 2274, 2282, 2305, 2347, 2466, 2496, 2590, 2683, 2758, 2808, 3505, 3564, 3574, 3645, 3829, 3926, 3936, 4119, 4136, 4166, 4185, 4258, 4319, 4322, 4437, 4544, 4573, 4628, 4635, 4639, 4735, 4793, 4813, 4909, 5036, 5207, 5270. In all £5,500 sterling.

Holders of these Bonds will take notice that the interest will cease after 1st July next.

A. H. CONEYBEARE,  
European Secretary and  
Treasurer.

London,  
1st June, 1938.

**Canadian National Railway Company**

WELLINGTON GREY & BRUCE RAILWAY COMPANY,  
7 PER CENT. BONDS.

NOTICE IS HEREBY GIVEN that the estimated earnings of the Wellington Grey & Bruce Railway Company for the half-year ending 30th June, 1938, applicable to meet interest on the above Bonds, will admit of the

payment of 43 lbs. 8d. per £100 Bond, and that this payment will be applied as follows, viz.:—22 ls. 10d. in final discharge of Coupon No. 112 due 1st July, 1926; and 41 lbs. 10d. on account of Coupon No. 113 due 1st January, 1927, and will be made on and after 1st July next at the offices of the Canadian National Railway Company, Orient House, 42/5, New Broad Street, London, E.C.2, England.

The coupons must be left three clear days for examination.

A. H. CONEYBEARE,  
European Secretary and  
Treasurer.

London,  
1st June, 1938.

**WANTED.**—Young Engineer of good education and address as Technical Assistant in the office of a large firm of Locomotive Manufacturers. Qualifications should include training and experience in the Locomotive Department of a Railway Company or Contract Works, Drawing Office experience and technical education at least up to the standard of Examination for Associate Membership of the Institution of Mechanical Engineers. Reply in confidence, stating age, full particulars, and salary required to: Box V, c/o A. W. Brown, 37, Tothill Street, London, S.W.1.

**London & North Eastern Railway**

NOTICE IS HEREBY GIVEN that, for the purpose of preparing the warrants for interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending

30th June, 1938, the balances will be struck as at the close of business on 10th June, and interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5.0 p.m. on 10th June.

By Order,  
P. J. DOWSETT,  
Secretary.

Marylebone Station,  
London, N.W.1.  
31st May, 1938.

**Universal Directory of Railway Officials and Railway Year Book**

43rd Annual Edition, 1937-38

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD.  
33, Tothill Street, Westminster, S.W.1.

**OFFICIAL ADVERTISEMENTS**

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—The Railway Gazette, 33, Tothill Street, Westminster, London, S.W.1.

test room is being provided in the laboratory at Swindon.

**MISCELLANEOUS WORKS.**—*Avonmouth.*—Signalling and permanent way improvements are to be carried out at Royal Edward Yard, Avonmouth.

*Cardiff (Canton).*—Temporary additional accommodation is to be provided at Canton Depot for the purpose of the Royal Agricultural Show which is being held at Cardiff this year.

*Castle Bar Park Halt, near West Ealing.*—There have been considerable building developments in the vicinity of this halt, with a subsequent increase of traffic there. At present passengers have to cross the line on the level and to obviate this, and at the same time to stop unauthorised user of the crossing for public purposes, a footbridge connecting the two platforms will be erected.

*Crumlin Low Level.*—An additional watering column is to be provided on the up platform at Crumlin Low Level.

*Gloucester.*—A 3,000 gallons water tank of the pillar type is to be erected on the docks branch at Gloucester. The tank will be connected to the Over Junction supply, and the existing pumping station on the docks branch will be closed.

Tenders are invited by the Agent, Assam Bengal Railway, receivable in England or India by June 24, for the supply of one overhead travelling electric crane of 25-ton capacity, to be delivered at Pahartali during the financial year 1938-9.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Miscellaneous Section), Simla, receivable by June 20, for the supply of asbestos cement sheets and accessories for the period, November 16, 1938-November 15, 1939.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Inspecting Engineer's office, 41, Tothill Street, Westminster, S.W.1, for the supply of 1,500 long-handled steel shovels.

Tenders are invited by the Egyptian State Railways Administration, receivable in the General Inspecting Engineer's office, 41, Tothill Street, Westminster, S.W.1, for the supply of 2,000 kg. mild steel angle.

Tenders are invited by the Egyptian State Railways Administration, receivable by June 16, at the office of the Superintendent of Stores, Saptieh, Cairo, for the supply of 250 carriage and wagon tyres.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo, by June 22, for the supply of 56,710 kg. mild steel rounds.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo, by June 29, for the supply of 500,000 kg. white-metal ingots.

Tenders are invited by the Egyptian State Railways Administration, receivable at the office of the Superintendent of Stores, Saptieh, Cairo, by June 25 for the supply of 38 tons of flat mild steel slabs.

Hallam, Sleigh & Cheston has now adopted as a trade mark, carrying the numbers 584321 and 584322, the descriptive title Simplastic for the well-known form of glazing, patented and marketed by this firm.

We regret that the order received by Alley & MacLellan Limited for air compressors, referred to in this column last week, was described as being placed by the Bengal-Nagpur Railway Administration; this should have been given as the Bengal-North-Western Railway Administration for which Messrs. Rendel, Palmer & Tritton are the Consulting Engineers.

**Exports of Railway Material from the United Kingdom in April**

	Apl., 1938	Apl., 1937	Four Months Ending Apl., 1938	Four Months Ending Apl., 1937
Locomotives, rail .. .. .	121,563	76,656	451,020	438,496
Carriages and wagons .. .. .	239,744	301,481	1,113,070	868,149
Rails, steel .. .. .	162,384	63,925	506,675	313,581
Wheels, sleepers, fishplates and miscellaneous materials .. .. .	209,224	137,653	693,319	416,992
Locomotive and rail exports included the following:—				
		Locomotives	Rails	
	Apl., 1938	Apl., 1937	Apl., 1938	Apl., 1937
Argentina .. .. .	4,834	20,437	9,367	2,543
Union of South Africa .. .. .	—	—	105,271	27,751
British India .. .. .	22,688	32,464	7,389	6,599

\* Figures not available

## Railway Share Market

Partly as a result of holiday influences there was further contraction of business in the stock and share markets this week, and in all departments of the Stock Exchange, with the exception of British Government securities, movements in values have been against holders. The uncertainties of European affairs, and the absence of news of an increase in industrial activity, have continued to be the dominating factors. Sentiment was also influenced by the fear that Germany may decide to default on the whole of her external debts.

Home railway traffics were again a considerable disappointment and must be regarded as giving a definite indication of the recession in trade activity, particularly in the heavy industries. It would appear, however, that sufficient time has not yet elapsed for the latter to reflect the speeding up of work in connection with the rearmament programme. The traffic figures for the past week show a total decrease of £315,000, which is a considerably larger decrease than had been

generally expected in the market. It is now felt that unless receipts show definite improvement during the next few weeks, the interim dividend decisions of the main line railways can hardly be as satisfactory as those for the first half of 1937. Nevertheless, it would appear that in many cases the fall in prices of the junior stocks has been excessive; but they are unlikely to show improvement until the present trend of markets is reversed.

Southern stocks have lost the relatively steady tendency shown in recent weeks, the past week's traffic decrease of £33,000 being larger than was anticipated. It was hoped that improvement in passenger receipts might do much to offset decreases in other classes of the railway's traffics, but over the next few weeks the passenger figures seem likely to make a much better showing in the case of this railway. Nevertheless, the deferred stock has now moved down to close on 17½, while the preferred has reacted sharply to 69½. L.M.S.R. ordinary changed hands down to 16½ this week, and the 4 per cent.

preference down to 64½, while at one time the 4 per cent. 1923 preference transferred at 46½. L.N.E.R. first and second preference have declined to 47 and 15½ respectively. Great Western ordinary is now 48½. Debenture stocks remained steady, but among prior charges L.N.E.R. 5 per cent. redeemable stock reacted to 82, and Southern and Great Western 5 per cent. preference were both fractionally lower at 110½ and 114½ respectively. London Transport "C" was subsequently steadier at 75½.

Argentine railway stocks have also been affected sharply by the prevailing trend on the Stock Exchange, including Central Argentine 5 per cent. debentures, B.A. Western 4 per cent. debentures and other prior charge securities of the leading companies. In other directions Antofagasta was lower at 8½, but Nitrate Rails came in for attention on any decline below 43s. Canadian Pacific shares and preference stock were lower under the influence of the traffic figures. French railway sterling bonds have fallen slightly.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1937-38	Week Ending	Traffics for Week		No. of Weeks	Aggregate Traffics to Date			Shares or Stock	Prices				
			Total this year	Inc. or Dec. compared with 1937		Totals		Increase or Decrease		Highest 1937	Lowest 1937	June 1 1938	Yield % (See Note)	
						This Year	Last Year							
South & Central America														
Antofagasta (Chili) & Bolivia	834	29.5.38	£ 18,490	+ £ 5,210	22	£ 364,030	£ 367,830	- £ 3,800	Ord. Stk.	29	101½	9	Nil	
Argentine North Eastern	753	28.5.38	10,440	+ 1,699	48	437,071	420,848	+ 16,223	"	191½	6	5	Nil	
Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	931½	60	85	411½	
Bolivar	174	Apr., 1938	3,700	- 2,300	18	15,600	23,200	- 7,600	6 p.c. Deb.	91½	5	8½	Nil	
Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	5½	91½	
Buenos Ayres & Pacific	2,806	28.5.38	85,236	- 21,340	48	4,242,748	4,605,068	- 362,320	Ord. Stk.	171½	5½	5	Nil	
Buenos Ayres Central	180	14.5.38	897,900	- 823,600	46	85,248,200	86,406,900	- 1,158,700	Mt. Deb.	412½	18	11½	Nil	
Buenos Ayres Gt. Southern	5,084	28.5.38	131,017	+ 2,853	48	7,130,432	7,178,306	- 47,874	Ord. Stk.	335½	13½	10½	Nil	
Buenos Ayres Western	1,830	28.5.38	40,943	- 7,072	48	2,170,720	2,405,041	- 234,321	"	314	104	7	Nil	
Central Argentine	3,700	28.5.38	93,049	- 46,390	48	5,731,393	7,362,046	- 1,630,653	"	341½	103½	4	Nil	
Do.	—	—	—	—	—	—	—	—	Did.	201½	4½	4	Nil	
Cent. Uruguay of M. Video	972	21.5.38	21,493	+ 1,466	47	860,564	835,529	+ 25,035	Ord. Stk.	67½	2	2	Nil	
Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	61½	1½	3	Nil	
Costa Rica	188	Mar., 1938	36,015	+ 6,498	39	233,338	171,651	+ 61,687	Stk.	38	27	26½	79½	
Dorada	70	Apr., 1938	14,100	+ 300	18	60,900	62,400	- 1,500	1 Mt. Db.	107	106	106	5½	
Entre Rios	810	28.5.38	14,545	+ 849	18	682,987	615,053	+ 67,934	Ord. Stk.	197½	6	5	Nil	
Great Western of Brazil	1,092	28.5.38	5,000	- 1,190	22	158,100	166,900	- 8,800	Ord. Sh.	34	18	14	Nil	
International of Cl. Amer.	794	Feb., 1938	\$477,297	- \$42,015	9	\$964,439	\$1,033,251	- \$68,812	1st Pref.	2/-	1/-	1½	Nil	
Interoceanic of Mexico	—	—	—	—	—	—	—	—	Stk.	81½	6	8½	2	
La Guaira & Caracas	22½	Apr., 1938	5,055	- 1,150	18	19,730	23,080	- 3,350	Ord. Stk.	91½	3	2	Nil	
Leopoldina	1,918	28.5.38	5,709	- 6,009	22	380,796	472,931	- 92,135	"	112	14	5½	Nil	
Mexican	483	21.5.38	\$326,000	- \$21,000	21	\$6,196,000	\$6,338,800	- \$142,800	"	112	14	5½	Nil	
Midland of Uruguay	319	Apr., 1938	9,614	+ 888	44	95,899	87,736	+ 8,163	Ord. Sh.	31½	2	1½	Nil	
Nitrate	386	15.5.38	5,896	- 498	20	69,025	70,975	- 1,950	Ord. Sh.	31½	2	1½	Nil	
Paraguay Central	274	21.5.38	\$4,165,006	+ \$107,000	47	\$148,524,000	\$138,925,000	+ \$9,601,000	Pr. Li. Stk.	84	79½	62½	95½	
Peruvian Corporation	1,059	Apr., 1938	70,108	- 26,974	44	810,864	827,889	- 17,025	Pref.	14½	4½	2½	Nil	
Salvador	100	21.5.38	£12,950	- £11,100	47	£930,325	£1,143,258	- £212,933	Pr. Li. Db.	23½	21½	22½	Nil	
San Paulo	153½	22.5.38	37,269	+ 2,229	21	625,876	642,570	- 16,694	Ord. Stk.	98½	56	41	9½	
Taltal	160	Apr., 1938	3,030	+ 230	44	34,985	34,610	+ 375	Ord. Sh.	17½	11½	34	136½	
United of Havana	1,353	28.5.38	18,836	- 4,279	48	1,185,873	1,315,153	- 129,280	Ord. Stk.	55½	51½	2½	Nil	
Uruguay Northern	73	Apr., 1938	1,002	+ 161	44	9,462	10,134	- 672	Deb. Stk.	10	2	2	Nil	
Canada														
Canadian National	23,781	21.5.38	645,035	- 127,399	21	12,938,809	14,737,269	- 1,798,460	—	—	—	—	—	
Canadian Northern	—	—	—	—	—	—	—	- 4 p.c.	Perp. Dbs.	77	62½	62½	6½	
Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	1017½	94½	102½	37½	
Canadian Pacific	17,186	21.5.38	476,690	- 48,800	21	9,542,200	10,321,600	- 779,400	Ord. Stk.	18	71½	5½	Nil	
India														
Assam Bengal	1,329	10.5.38	35,662	+ 1,334	6	144,292	142,896	+ 1,396	Ord. Stk.	86	73½	79	315½	
Barsi Light	202	10.5.38	3,697	+ 772	6	17,662	16,267	+ 1,395	Ord. Sh.	66½	46	60	85½	
Bengal & North Western	2,116	23.5.38	89,470	- 7,555	7	444,649	475,717	- 31,068	Ord. Stk.	317	301	297½	6	
Bengal Doonars & Extension	161	23.5.38	3,199	+ 135	7	17,077	16,280	+ 797	"	100	84	85½	7	
Bengal-Nagpur	3,268	10.5.38	199,875	- 8,382	6	800,475	839,332	- 38,857	"	101	89	91½	43½	
Bombay, Baroda & Cl. India	3,072	21.5.38	277,275	+ 6,675	7	1,398,750	1,432,500	- 33,750	"	113	110½	110½	57½	
Madras & Southern Mahratta	2,947	10.5.38	162,450	+ 8,004	6	652,125	643,433	+ 8,692	"	110	105	106½	87½	
Rohilkund & Kumaon	571	20.5.38	17,854	- 748	7	91,568	96,038	- 4,470	"	114	302	303½	519½	
South Indian	2,531½	10.5.38	118,791	- 105	6	466,028	476,641	- 10,613	"	103½	99½	102½	49½	
Various														
Beira-Umtali	204	Mar., 1938	84,833	- 656	26	528,588	418,485	+ 110,103	—	—	—	—	—	
Egyptian Delta	620	10.5.38	5,839	- 188	6	23,044	23,093	- 49	Prf. Sh.	31/-	34	34	Nil	
Kenya & Uganda	1,625	Apr., 1938	259,306	- 9,240	18	1,061,463	1,121,525	- 60,062	B. Deb	48½	43½	43	81½	
Manila	—	—	—	—	—	—	—	—	Inc. Deb.	98	93½	93½	41½	
Midland of W. Australia	277	Apr., 1938	16,585	+ 3,533	44	147,590	132,650	+ 14,940	—	—	—	—	—	
Nigerian	1,900	9.4.38	32,745	- 45,347	2	40,630	115,719	- 75,089	—	—	—	—	—	
Rhodesia	2,442	Mar., 1938	410,494	+ 564	26	2,512,028	2,109,905	+ 402,123	—	—	—	—	—	
South Africa	13,263	21.5.38	601,936	- 25,428	8	4,435,684	4,497,751	- 62,067	—	—	—	—	—	
Victoria	4,774	Feb., 1938	794,106	- 61,204	35	6,392,472	6,705,843	- 313,371	—	—	—	—	—	

NOTE.—Yields are based on the approximate current prices and are within a fraction of ½

† Receipts are calculated @ 1s. 6d. to the rupee. \$ ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value